En este anexo se presentan:

A. Los textos completos con las oraciones numeradas.
B. Matriz de cada texto analizado con las unidades léxicas que han establecido repetición, indicando el tipo de repetición.
C. Matriz de cada texto con la contabilización de unidades léxicas.
D. Tabla de cada texto analizado con el número de conexiones que las oraciones presentan.
E. Los textos resultantes después de eliminar las oraciones marginales.
F. Listado de las unidades léxicas que han establecido repetición en los dos tipos de texto analizados.
G. Los textos originales del *corpus* analizado.
H. Listado de abreviaciones utilizadas.

1. TEXTOS PERTENECIENTES A LAS INTRODUCCIONES DEL ARTÍCULO DE INVESTIGACIÓN.

1. 1. Texto 1: *Bioconversion of solid food wastes to ethanol*.

1. Energy and environmental issues take turns driving the development and use of alternative fuels for motor vehicles. **2**. As the availability of petroleum-derived fuels and industrial feedstocks decreases owing to depletion and also economic and political developments, renewable sources of organic compounds are tested for their suitability as alternatives to petroleum-based substances. **3**. Recent environmental concerns such as ozone non-attainment, solid waste management and control of toxic air pollutants have been other reasons for finding clean-burning alternative fuels.

4. Ethanol production from agricultural products has been in practice for the past 80 years. **5**. Ethanol can be produced from many kinds of raw material that contains starch, sugar or cellulose. **6**. Wastes from food processing industries represent a severe pollution problem and need better waste management techniques. **7**. Utilization of food processing wastes to produce fuel alcohol with an increased efficiency has been under investigation in our laboratory for the past few years. **8**. We were able to develop a novel and highly efficient cofermentation system for food wastes containing starch and lactose.

9. Fermentation is an anaerobic, energy-releasing transformation of carbohydrates by living organisms. **10**. Yeast can ferment a wide variety of sugars and oligosaccharides other than glucose. **11**. The D-hexoses and oligosaccharides fermented most often by yeast are glucose, mannose, fructose, galactose, maltose, lactose, melibiose, trehalose and raffinose. **12**. The yeast in most widespread use for alcoholic fermentation is *Saccharomyces cerevisiae*. **13**. Several studies on ethanol production via fermentation and the effects of different factors on the fermentation have been published in the past decade. **14**. Utilization of cheese whey as the liquid portion of a fermenting corn mash has been investigated by Whalen et al. **15**. Their work involved the fermentation of lactose/corn mash by the use of a dual yeast inoculum (*Kluyveromyces marxianus* and distillerís yeast). **16**. This lactose/glucose cofermentation process took 60-72 h for completion. **17**. We investigated the use of whey with bakery products and other starchy waste products by the application of lactose hydrolysis in conjunction with a single yeast inoculum to reduce the fermentation time and an increase in alcohol yield.

18. The objectives of this work were to study the effect of low- and high-temperature enzymes on hydrolysis of food wastes, to compare the fermentation of bakery products with mixed waste products and to study the cofermentation of cheese whey and starchy food wastes.

1. 1. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. alternative – alternatives **rs**. fuels – fuels				
3	**rs**. environmental – environmental **rs**. alternative – alternative **rs**. fuels – fuels	**rs**. fuels – fuels **rs**. alternatives – alternative			
4					
5				**rs**. ethanol – ethanol **rc**. production – produced **psm**. products – material	
6			**rs**. waste – waste **rs**. management – management **rc**. pollutants – pollution		
7	**rs**. fuels – fuel	**rs**. fuels – fuel	**rs**. fuels – fuel	**hip**. ethanol – alcohol **rc**. production – produce **rs**. past – past **rs**. years – years	**hip**. ethanol – alcohol **rs**. produced – produce
8			**rs**. waste – wastes		**rs**. containing containing **rs**. starch – starch
9					
10					**rs**. sugar – sugars
11					
12					
13				**rs**. ethanol – ethanol **rs**. production – production **rs**. past – past	**rs**. ethanol – ethanol **rc**. produced – production
14					
15					
16					

	1	2	3	4	5
17			**rs**. waste – waste	**hip**. ethanol – alcohol **psp**. production – yield **rs**. products – products	**hip**. ethanol – alcohol **rc**. produced – products
18			**rs**. waste – wastes	**rs**. products – products	**rc**. produced – products **rc**. starch – starchy

	6	7	8	9	10
7	**rs**. wastes – wastes **rs**. food – food **rs**. processing – processing				
8	**rs**. wastes – wastes **rs**. food – food	**rs**. food – food **rs**. wastes – wastes **rc**. efficiency – efficient **rs**. our – we+			
9			**rc**. cofermentation – fermentation		
10			**rc**. cofermentation – ferment	**rc**. fermentation – ferment	
11			**rc**. cofermentation – fermented **rs**. lactose – lactose	**rc**. fermentation – fermented	**rs**. yeast – yeast **rs**. ferment – fermented **rs**. oligosaccharides – oligosaccharides **rs**. glucose – glucose
12		**psm**. utilization – use **rc**. alcohol – alcoholic	**rc**. cofermentation – fermentation	**rs**. fermentation – fermentation	**rs**. yeast – yeast **rc**. ferment – fermentation
13		**tr**. alcohol – ethanol **rc**. produce – production **psm**. investigation – studies **rs**. past – past	**rc**. cofermentation – fermentation	**rs**. fermentation – fermentation	**rc**. ferment – fermentation
14		**rs**. utilization – utilization **rc**. investigation – investigated	**rc**. cofermentation – fermenting	**rc**. fermentation – fermenting	**rs**. ferment – fermenting
15			**rc**. cofermentation – fermentation **rs**. lactose – lactose	**rs**. fermentation – fermentation	**rs**. yeast – yeast **rc**. ferment – fermentation
16			**rs**. cofermentation – cofermentation **rs**. lactose – lactose	**rc**. fermentation – cofermentation	**rc**. ferment – cofermentation **rs**. glucose – glucose

	6	7	8	9	10
17		**psm**. utilization – use **rs**. wastes – waste **rc**. investigation – investigated **rs**. our – we+	**rs**. we – we+ **rc**. cofermentation – fermentation **hip**. food – products **rs**. wastes – waste **rc**. starch – starchy **rs**. lactose – lactose	**rs**. fermentation – fermentation	**rs**. yeast – yeast **rc**. ferment – fermentation
18	**rs**. wastes – wastes **rs**. food – food	**rs**. food – food **rs**. wastes – wastes **pc**. investigation – study (**study**)	**rc**. cofermentation – fermentation **rs**. food – food **rs**. wastes – wastes **rc**. starch – starchy	**rs**. fermentation – fermentation	**rc**. ferment – fermentation

	11	12	13	14	15
12	**rc**. fermented – fermentation **rs**. yeast – yeast				
13	**rc**. fermented – fermentation	**rs**. fermentation – fermentation			
14	**rs**. fermented – fermentating	**psm**. use – utilization **rc**. fermentation – fermenting	**pc**. studies – investigated (**investigation**) **rc**. fermentation – fermenting		
15	**rc**. fermented – fermentation **rs**. yeast – yeast **rs**. lactose – lactose	**rs**. yeast – yeast **rs**. fermentation – fermentation	**psp**. studies – work **rs**. fermentation – fermentation	**psm**. utilization – use **rc**. fermenting – fermentation **rs**. corn – corn **rs**. mash – mash **s**. Whalen et al – their	
16	**rc**. fermented – cofermentation **rs**. glucose – glucose **rs**. lactose – lactose	**rc**. fermentation – cofermentation	**rc**. fermentation – cofermentation	**rc**. fermenting – cofermentation	**rc**. fermentation – cofermentation **rs**. lactose – lactose
17	**rc**. fermented – fermentation **rs**. yeast – yeast **rs**. lactose – lactose	**rs**. yeast – yeast **rs**. use – use **rc**. alcoholic – alcohol **rs**. fermentation – fermentation	**hip**. ethanol – alcohol **pc**. studies – investigated (**investigation**) **rc**. production – products **rs**. fermentation – fermentation	**psm**. utilization – use **rs**. whey – whey **rc**. fermenting – fermentation **rs**. investigated – investigated	**pc**. work – investigated (**investigation**) **rs**. fermentation – fermentation **rs**. lactose – lactose **rs**. use – use **a**. dual – single **rs**. yeast – yeast **rs**. inoculum – inoculum
18	**rc**. fermented – fermentation	**rs**. fermentation – fermentation	**rc**. studies – study **rc**. production – products **rs**. fermentation – fermentation	**rs**. cheese – cheese **rs**. whey – whey **rc**. fermenting – fermentation **psm**. investigated – study	**rs**. work – work **rs**. fermentation – fermentation

	16	17
17	**rs**. lactose – lactose **rc**. cofermentation – fermentation	
18	**rc**. cofermentation – fermentation	**psm**. investigated – study **rs**. whey – whey **rs**. bakery – bakery **rs**. products – products **rs**. starchy – starchy **rs**. waste – wastes **rs**. fermentation – fermentation

1. 1. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11
2	2										
3	3	2									
4	0	0	0								
5	0	0	0	3							
6	0	0	3	0	0						
7	1	1	1	4	2	3					
8	0	0	1	0	2	2	4				
9	0	0	0	0	0	0	0	1			
10	0	0	0	0	1	0	0	1	1		
11	0	0	0	0	0	0	0	2	1	4	
12	0	0	0	0	0	0	2	1	1	2	2
13	0	0	0	3	2	0	4	1	1	1	1
14	0	0	0	0	0	0	2	1	1	1	1
15	0	0	0	0	0	0	0	2	1	2	3
16	0	0	0	0	0	0	0	2	1	2	3
17	0	0	1	3	2	0	3(4)	5(6)	1	2	3
18	0	0	1	1	2	2	3	4	1	1	1

	12	13	14	15	16	17
13	1					
14	2	2				
15	2	2	5			
16	1	1	1	2		
17	4	4	4	7	2	
18	1	3	4	2	1	7

1. 1. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,1) [**1**]	**2**. (0,0) [**0**]	**3**. (1,1) [**2**]
4. (0,4) [**4**]	**5**. (1,0) [**1**]	**6**. (1,1) [**2**]
7. (2,4) [**6**]	**8**. (1,2) [**3**]	**9**. (0,0) [**0**]
10. (0,1) [**1**]	**11**. (1,3) [**4**]	**12**. (0,1) [**1**]
13. (2,2) [**4**]	**14**. (0,3) [**3**]	**15**. (2,1) [**3**]
16. (1,0) [**1**]	**17**. (8,1) [**9**]	**18**. (5 ,-) [**5**]

1. 1. 4. Texto resultante tras eliminar las oraciones marginales.

1. Energy and environmental issues take turns driving the development and use of alternative fuels for motor vehicles. **3**. Recent environmental concerns such as ozone non-attainment, solid waste management and control of toxic air pollutants have been other reasons for finding clean-burning alternative fuels.

4. Ethanol production from agricultural products has been in practice for the past 80 years. **5**. Ethanol can be produced from many kinds of raw material that contains starch, sugar or cellulose. **6**. Wastes from food processing industries represent a severe pollution problem and need better waste management techniques. **7**. Utilization of food processing wastes to produce fuel alcohol with an increased efficiency has been under investigation in our laboratory for the past few years. **8**. We were able to develop a novel and highly efficient cofermentation system for food wastes containing starch and lactose.

10. Yeast can ferment a wide variety of sugars and oligosaccharides other than glucose. **11**. The D-hexoses and oligosaccharides fermented most often by yeast are glucose, mannose, fructose, galactose, maltose, lactose, melibiose, trehalose and raffinose. **12**. The yeast in most widespread use for alcoholic fermentation is *Saccharomyces cerevisiae.* **13**. Several studies on ethanol production via fermentation and the effects of different factors on the fermentation have been published in the past decade. **14**. Utilization of cheese whey as the liquid portion of a fermenting corn mash has been investigated by Whalen et al. **15**. Their work involved the fermentation of lactose/corn mash by the use of a dual yeast inoculum (*Kluyveromyces marxianus* and distillerís yeast). **16**. This lactose/glucose cofermentation process took 60-72 h for completion. **17**. We investigated the use of whey with bakery products and other starchy waste products by the application of lactose hydrolysis in conjunction with a single yeast inoculum to reduce the fermentation time and an increase in alcohol yield.

18. The objectives of this work were to study the effect of low- and high-temperature enzymes on hydrolysis of food wastes, to compare the fermentation of bakery products with mixed waste products and to study the cofermentation of cheese whey and starchy food wastes.

1. 2. Texto 2: *Speciation as an analytical aid in trace element research in infant nutrition.*

1. During the prenatal period, the fetus is supplied with minerals and trace elements via maternal circulation and controlled placental transfer. **2**. After separation from the mother, the newborn has to develop its own functions and regulatory systems, including respiration, digestion and immune defenses. **3**. Trace elements are involved in the form of metalloproteins and enzymes at all stages in the development of these processes. **4**. Infancy is further characterized by an extremely high rate of synthesis of tissue cells, which leads to the infant's doubling its birth mass in a period of only 4 months. **5**. The infant's trace element requirement is supplied not only by amounts transferred via the mother's milk in specific binding forms or by formula, but also from prenatal stores. **6**. Special attention must be paid to very low birth mass, premature infants because they are born with lower stores of essential micronutrients. **7**. Trace elements must be added to pre-term infants' formulas to satisfy their higher dietary requirements.

8. In early infancy, breast milk or cow's-milk-based and soy- based formulas are the only dietary source of essential trace elements. **9**. The mother's milk provides an adequate supply of all micronutrients for the full-term infant. **10**. The concentrations and the fairly well defined binding pattern of the essential trace elements in human milk are therefore used as a reference. **11**. On the other hand, the trace elements chromium, copper, zinc, iron, manganese, molybdenum, iodine and, recently, selenium have been added to the formulas as compounds and at concentration levels that are different from those found in breast milk. **12**. With the sole exception of selenium, the trace element intake of infants via formula is significantly higher than via breast milk. **13**. The iron supply was found to be up to 20 times higher despite the fact that the high hemoglobin of newborns forms a reservoir. **14**. In the case of manganese, the supply of the formula-fed infant can be as much as 1000 times higher than that of the breast-fed infant. **15**. During the first months of life such high values are critical with respect to known Fe-Zn, Fe-Cu and Mn-Fe interactions. **16**. As negative effects of high iron supplementation (> 4 mg 1^{-1}) significantly lower levels of glutathione peroxidase in serum and superoxide dismutase in erythrocytes have been observed in formula-fed infants. **17**. In addition given the prooxidant effects of excessive amounts of iron in the iron(II) form, the balance between the formation and inactivation of free radicals generated by the rapid growth rate of premature newborns during the first months of life might be disturbed.

18. In spite of the significantly lower trace element intake of breast-fed infants, their serum concentrations of the essential elements Cu, Fe and Zn are comparable to those of formula-fed infants. **19**. Further, mass and length gains, as developmental parameters, were comparable for the two groups over a period of 4 months. **20**. Because no signs of deficiency were observed in breast-fed infants, the bio availibility of copper, iron and zinc of the special binding proteins in human milk must be considerably higher than that in cow's milk or soy-based formula.

21. In the light of these facts, we considered it of importance to investigate the concentration, chemical form and nutritive value of trace elements in both human milk and infant formulas, with our ultimate goal being to obtain as much information as possible about adequate infant nutrition. **22**. We therefore carried out speciation studies to determine the binding form of trace elements in these nutritive fluids, combining methods for protein separation with methods for trace element determination in the eluted fractions.

1. 2. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**pc**. maternal – mother (**motherly**)				
3	**rs**. trace – trace **rs**. elements – elements	**rc**. develop – development **d**. own functions .... defenses – these			
4		**psm**. newborn – infant			
5	**rs**. prenatal – prenatal **rs**. supplied – supplied **rs**. trace – trace **rs**. elements – element **rs**. via – via **pc**. maternal – mother (**motherly**) **rc**. transfer – transferred	**rs**. mother – mother **psm**. newborn – infant	**rs**. trace – trace **rs**. elements – element	**rs**. infant – infant	
6	**psm**. trace elements – micronutrients	**psm**. newborn – infants	**psm**. trace elements – micronutrients	**rs**. infant – infants **rs**. birth – birth **rs**. mass – mass	**rs**. infant – infants **psm**. trace element – micronutrients **rs**. stores – stores
7	**rs**. trace – trace **rs**. elements – elements	**psm**. newborn – infants	**rs**. trace – trace **rs**. elements – elements	**rs**. infant – infants	**rs**. infant – infants **rs**. trace – trace **rs**. element – elements **rs**. requirement – requirements **rs**. formula – formulas
8	**rs**. trace – trace **rs**. elements – elements **tr**. maternal – breast	**tr**. mother – breast **pc**. newborn – infancy (**infant**)	**rs**. trace – trace **rs**. elements – elements	**rs**. infancy – infancy	**rc**. infant – infancy **rs**. trace – trace **rs**. element – elements **psm**. mother – breast **rs**. milk – milk **rs**. formula – formulas
9	**rc**. supplied – supply **psm**. trace elements – micronutrients **pc**. maternal – mother (**motherly**)	**rs**. mother – mother **psm**. newborn – infant	**psm**. trace elements – micronutrients	**rs**. infant – infant	**rs**. infant – infant **psm**. trace elements – micronutrients **rc**. supplied – supply **rs**. mother – mother **rs**. milk – milk
10	**rs**. trace – trace **rs**. elements – elements **tr**. maternal – human	**tr**. mother – human	**rs**. trace – trace **rs**. elements – elements		**rs**. trace – trace **rs**. element – elements **hip**. mother – human **rs**. milk – milk **psm**. specific – defined **rs**. binding – binding **psm**. forms – pattern

	1	2	3	4	5
11	**rs**. trace – trace **rs**. elements – elements **tr**. maternal – breast	**tr**. mother – breast	**rs**. trace – trace **rs**. elements – elements		**rs**. trace – trace **rs**. element – elements **psm**. mother – breast **rs**. milk – milk **rs**. formula – formulas
12	**rs**. trace – trace **rs**. elements – element **rs**. via – via **tr**. maternal – breast	**tr**. mother – breast **psm**. newborn – infants	**rs**. trace – trace **rs**. elements – element	**rs**. infant – infants	**rs**. infant – infants **rs**. trace – trace **rs**. element – element **rs**. via – via **psm**. mother – breast **rs**. milk – milk **rs**. formula – formula
13	**rc**. supplied – supply **tr**. trace elements – iron	**rs**. newborn – newborns	**tr**. trace elements – iron	**psm**. infant – newborns	**psm**. infant – newborns **tr**. trace element – iron **rc**. supplied – supply **psm**. stores – reservoir
14	**rc**. supplied – supply **tr**. trace elements – manganese **tr**. maternal – breast	**tr**. mother – breast **psm**. newborn – infant	**tr**. trace elements – manganese	**rs**. infant – infant	**rs**. infant – infant **tr**. trace element – manganese **rc**. supplied – supply **psm**. mother – breast **rs**. formula – formula
15	**tr**. trace elements – Fe-Zn, Fe-Cu and Mn-Fe		**tr**. trace elements – Fe-Zn, Fe-Cu and Mn-Fe		**tr**. trace elements – Fe-Zn, Fe-Cu and Mn-Fe
16	**tr**. trace elements – iron	**psm**. newborn – infants	**tr**. trace elements – iron	**rs**. infant – infants	**rs**. infant – infants **tr**. trace element – iron **rs**. formula – formula
17	**tr**. trace elements – iron	**rs**. newborn – newborns	**tr**. trace elements – iron	**psm**. infant – newborns **rs**. months – months	**psm**. infant – newborns **tr**. trace element – iron **rs**. amounts – amounts
18	**rs**. trace – trace **rs**. elements – element **tr**. maternal – breast	**tr**. mother – breast **psm**. newborn – infants	**rs**. trace – trace **rs**. elements – element	**rs**. infant – infants	**rs**. infant – infants **rs**. trace – trace **rs**. element – element **psm**. mother – breast **rs**. formula – formula
19				**rs**. mass – mass **rs**. period – period **rs**. 4 – 4 **rs**. months – months	
20	**tr**. trace elements – copper, iron and zinc **tr**. maternal – breast	**tr**. mother – breast **psm**. newborn – infants	**tr**. trace elements – copper, iron and zinc **rc**. metalloproteins – proteins	**rs**. infant – infants	**rs**. infant – infants **tr**. trace element – copper, iron and zinc **hip**. mother – human **rs**. milk – milk **psm**. specific – special* **rs**. binding – binding* **rs**. formula – formula

	1	2	3	4	5
21	**rs**. trace – trace **rs**. elements – elements **tr**. maternal – human	**tr**. mother – human **psm**. newborn – infant	**rs**. trace – trace **rs**. elements – elements	**rs**. infant – infant	**rs**. infant – infant **rs**. trace – trace **rs**. element – elements **hip**. mother – human **rs**. milk – milk **rs**. forms – form* **rs**. formula – formulas
22	**rs**. trace – trace **rs**. elements – elements		**rs**. trace – trace **rs**. elements – elements **rc**. metalloproteins – protein		**rs**. trace – trace **rs**. element – elements **hip**. milk – fluids **rs**. binding – binding **rs**. forms – form

	6	7	8	9	10
7	**psm**. premature – pre-term **rs**. infants – infants **psm**. micronutrients – trace elements				
8	**rc**. infants – infancy **rs**. essential – essential **psm**. micronutrients – trace elements	**rs**. trace – trace **rs**. elements – elements **rc**. infants – infancy **rs**. formulas – formulas **rs**. dietary – dietary			
9	**a**. premature – full-term **rs**. infants – infant **rs**. micronutrients – micronutrients	**psm**. trace elements – micronutrients **a**. pre-term – full-term **rs**. infants – infant	**rc**. infancy – infant **psm**. breast – mother **rs**. milk – milk **psm**. trace elements – micronutrients		
10	**rs**. essential – essential **psm**. micronutrients – trace elements	**rs**. trace – trace **rs**. elements – elements	**tr**. breast – human **rs**. milk – milk **rs**. essential – essential **rs**. trace – trace **rs**. elements – elements	**hip**. mother – human **rs**. milk – milk **psm**. micronutrients – trace elements	
11	**psm**. micronutrients – trace elements	**rs**. trace – trace **rs**. elements – elements **rs**. added – added **rs**. formulas – formulas	**rs**. breast – breast **rs**. milk – milk **rs**. formulas – formulas **rs**. trace – trace **rs**. elements – elements	**psm**. mother – breast **rs**. milk – milk **psm**. micronutrients – trace elements	**rs**. concentrations – concentration **rs**. trace – trace **rs**. elements – elements **tr**. human – breast **rs**. milk – milk
12	**rs**. infants – infants **psm**. micronutrients – trace element	**rs**. trace – trace **rs**. elements – element **rs**. infants – infants **rs**. formulas – formula	**rc**. infancy – infants **rs**. breast – breast **rs**. milk – milk **rs**. formulas – formula **rs**. trace – trace **rs**. elements – element	**psm**. mother – breast **rs**. milk – milk **psm**. micronutrients – trace elements **rs**. infant – infants	**rs**. trace – trace **rs**. elements – element **tr**. human – breast **rs**. milk – milk
13	**psm**. infants – newborns **tr**. micronutrients – iron	**tr**. trace elements – iron **psm**. infants – newborns	**pc**. infancy – newborns (**infant**) **tr**. trace elements – iron	**rs**. supply – supply **tr**. micronutrients – iron **psm**. infant – newborns	**tr**. trace elements – iron

	6	7	8	9	10
14	**rs**. infants – infant **tr**. micronutrients – manganese	**tr**. trace elements – manganese **rs**. infants – infant **rs**. formulas – formula	**rc**. infancy – infant **rs**. breast – breast **rs**. formulas – formula **tr**. trace elements – manganese	**psm**. mother – breast **rs**. supply – supply **tr**. micronutrients – manganese **rs**. infant – infant	**tr**. trace elements – manganese **tr**. human – breast
15	**tr**. micronutrients – Fe-Zn, Fe-Cu and Mn-Fe	**tr**. trace elements – Fe-Zn, Fe-Cu and Mn-Fe	**tr**. trace elements – Fe-Zn, Fe-Cu and Mn-Fe	**tr**. micronutrients – Fe-Zn, Fe-Cu and Mn-Fe	**tr**. trace elements – Fe-Zn, Fe-Cu and Mn-Fe
16	**rs**. infants – infants **tr**. micronutrients — iron	**tr**. trace elements – iron **rs**. infants – infants **rs**. formulas – formula	**rc**. infancy – infants **rs**. formulas – formula **tr**. trace elements – iron	**tr**. micronutrients – iron **rs**. infant – infants	**tr**. trace elements – iron
17	**rs**. premature – premature **psm**. infants – newborns **tr**. micronutrients — iron	**tr**. trace elements – iron **psm**. pre-term – premature **psm**. infants – newborns	**pc**. infancy – newborns (**infant**) **tr**. trace elements – iron	**tr**. micronutrients – iron **psm**. infant – newborns	**tr**. trace elements – iron
18	**rs**. infants – infants **rs**. essential – essential **psm**. micronutrients – trace element	**rs**. trace – trace **rs**. elements – element **rs**. infants – infants **rs**. formulas – formula	**rc**. infancy – infants **rs**. breast – breast **rs**. formulas – formula **rs**. essential – essential **rs**. trace – trace **rs**. elements – element	**psm**. mother – breast **psm**. micronutrients – trace elements **rs**. infant – infants	**rs**. concentrations – concentrations **rs**. essential – essential **rs**. trace – trace **rs**. elements – element **tr**. human – breast
19	**rs**. mass – mass*				
20	**rs**. infants – infants **tr**. micronutrients – copper, iron and zinc	**tr**. trace elements – copper, iron and zinc **rs**. infants – infants **rs**. formulas – formula	**rc**. infancy – infants **rs**. breast – breast **rs**. milk – milk **rs**. cow – cow **rs**. soy – soy **rs**. based – based **rs**. formulas – formula **tr**. trace elements – copper, iron and zinc	**psm**. mother – breast **rs**. milk – milk **tr**. micronutrients – copper, iron and zinc **rs**. infant – infants	**psm** defined – special* **rs**. binding – binding* **tr**. trace elements – copper, iron and zinc **rs**. human – human **rs**. milk – milk

	6	7	8	9	10
21	**rs**. infants – infant **psm**. micronutrients – trace elements	**rs**. trace – trace **rs**. elements – elements **rs**. infants – infant **rs**. formulas – formulas	**rc**. infancy – infant **tr**. breast – human **rs**. milk – milk **rs**. formulas – formulas **rs**. trace – trace **rs**. elements – elements	**hip**. mother – human **rs**. milk – milk **rs**. adequate – adequate **psm**. micronutrients – trace elements **rs**. infant – infant	**rs**. concentrations – concentration **rs**. trace – trace **rs**. elements – elements **rs**. human – human **rs**. milk – milk
22	**psm**. micronutrients – trace elements	**rs**. trace – trace **rs**. elements – elements	**rs**. trace – trace **rs**. elements – elements **hip**. milk – fluids	**hip**. milk – fluids **psm**. micronutrients – trace elements	**rs**. binding – binding **psm**. pattern – form **rs**. trace – trace **rs**. elements – elements **hip**. milk – fluids

	11	12	13	14	15
12	**rs**. trace – trace **rs**. elements – element **rs**. selenium – selenium **rs**. formulas – formula **rs**. breast – breast **rs**. milk – milk				
13	**rs**. iron iron **rs**. found – found	**tr**. trace element – iron **psm**. infants – newborns **rs**. higher – higher **e**. than via breast milk – 0			
14	**rs**. manganese – manganese **rs**. formulas – formula **rs**. breast – breast	**tr**. trace element – manganese **rs**. infants – infant **rs**. formula – formula **rs**. higher – higher **rs**. breast – breast	**tr**. iron – manganese **rs**. supply – supply **tr**. 20 – 1000 **rs**. times – times **rs**. higher – higher **psm**. newborns – infant		
15	**psm**. copper – Cu **psm**. zinc – Zn **psm**. iron – Fe **psm**. manganese – Mn	**tr**. trace element – Fe-Zn, Fe-Cu and Mn-Fe **rs**. higher – high	**psm**. iron – Fe **hip**. 20 – values **rs**. higher – high	**psm**. manganese – Mn **hip**. 1000 – values **rs**. higher – high	
16	**rs**. iron – iron **rs**. formulas – formula **rs**. levels – levels*	**tr**. trace element – iron **rs**. infants – infants **rs**. formula – formula **rs**. higher – high	**rs**. iron – iron **rs**. higher – high **psm**. newborns – infants	**tr**. manganese – iron **rs**. formula – formula **rs**. fed – fed **rs**. infant – infants	**rs**. high – high **psm**. Fe – iron
17	**rs**. iron – iron	**tr**. trace element – iron **psm**. infants – newborns	**rs**. iron – iron **rs**. newborns – newborns	**tr**. manganese – iron **psm**. infant - newborns	**rs**. first – first **rs**. months – months **rs**. life – life **psm**. Fe – iron

	11	12	13	14	15
18	**rs**. trace – trace **rs**. elements – element **psm**. copper – Cu **psm**. zinc – Zn **psm**. iron – Fe **rs**. formulas – formula **rs**. concentration – concentrations* **rs**. breast – breast	**rs**. trace – trace **rs**. element – element **rs**. intake – intake **rs**. infants – infants **rs**. formula – formula **rs**. significantly – significantly **a**. higher – lower **rs**. breast – breast	**psm**. iron – Fe **a**. higher – lower **psm**. newborns – infants	**hip**. manganese – trace element **rs**. formula – formula **rs**. fed – fed **rs**. infant – infants **a**. higher – lower **rs**. breast – breast	**a**. high – lower **rs**. Fe – Fe **rs**. Zn – Zn **rs**. Cu – Cu **hip**. Mn – trace element
19					
20	**rs**. copper – copper **rs**. zinc – zinc **rs**. iron – iron **rs**. formulas – formula **rs**. breast – breast **rs**. milk – milk	**tr**. trace element – copper, iron and zinc **rs**. infants – infants **rs**. formula – formula **rs**. breast – breast **rs**. milk – milk	**rs**. iron – iron **psm**. newborns – infants	**tr**. manganese – copper, iron and zinc **rs**. formula – formula **rs** fed – fed **rs**. infant – infants **rs**. breast – breast	**psm**. Fe – iron **psm**. Zn – zinc **psm**. Cu – copper
21	**rs**. trace – trace **rs**. elements – elements **rs**. formulas – formulas **rs**. concentration – concentration **tr**. breast – human **rs**. milk – milk	**rs**. trace – trace **rs**. element – elements **rs**. infants – infant **rs**. formula – formulas **tr**. breast – human **rs**. milk – milk	**hip**. iron – trace elements **psm**. newborns – infant	**hip**. manganese – trace elements **rs**. formula – formulas **rs**. infant – infant **tr**. breast – human	**hip**. Fe-Zn, Fe-Cu and Mn-Fe – trace elements
22	**rs**. trace – trace **rs**. elements – elements **hip**. milk – fluids	**rs**. trace – trace **rs**. element – elements **hip**. milk - fluids	**hip**. iron – trace elements	**hip**. manganese – trace elements	**hip**. Fe-Zn, Fe-Cu and Mn-Fe – trace elements

	16	17	18	19	20	21
17	**rs**. effects – effects **rs**. iron – iron **psm**. infants – neworns					
18	**a**. high – lower **psm**. iron – Fe **rs**. serum – serum* **rs**. formula – formula **rs**. fed – fed **rs**. infants – infants	**psm**. iron – Fe **psm**. newborns – infants				
19			**hip**. breast-fed-infants, formula-fed-infants – groups			
20	**rs**. iron – iron **rs**. observed – observed **rs**. formula – formula **rs**. fed – fed **rs**. infants – infants	**rs**. iron – iron **psm**. newborns – infants	**psm**. significantly – considerably* **a**. lower – higher* **rs**. breast – breast **rs**. fed – fed **rs**. infants – infants **psm**. Cu – copper **psm**. Fe – iron **psm**. Zn – zinc **rs**. formula – formula			
21	**hip**. iron – trace elements **rs**. formula – formulas **rs**. infants – infant	**hip**. iron – trace elements **psm**. newborns – infant	**rs**. trace – trace **rs**. element – elements **tr**. breast – human **rs**. concentrations – concentration **rs**. formula – formulas **rs**. infants – infant		**d**. oración 20 – these **rs**. infants – infant **hip**. copper, iron and zinc – trace elements **rs**. human – human **rs**. milk – milk **rs**. formula – formulas	
22	**hip**. iron – trace elements	**hip**. iron – trace elements	**rs**. trace – trace **rs**. element – elements		**hip**. copper, iron and zinc – trace elements **rs**. binding – binding **rs**. proteins – protein **hip**. milk – fluids	**rs**. we – we+ **pc**. investigate – studies (**investigations**) **rs**. nutritive – nutritive **rs**. trace – trace **rs**. elements – elements **hip**. milk – fluids

1. 2. 2. Matriz con el número de unidades.

	1	2	3	4	5	6	7	8	9	10	11
2	1										
3	2	2									
4	0	1	0								
5	7	2	2	1							
6	1	1	1	3	3						
7	2	1	2	1	5	3					
8	3	2	2	1	6	3	5				
9	3	2	1	1	5	3	3	4			
10	3	1	2	0	7	2	2	5	3		
11	3	1	2	0	5	1	4	5	3	5	
12	4	2	2	1	7	2	4	6	4	4	6
13	2	1	1	1	4	2	2	2	3	1	2
14	3	2	1	1	5	2	3	4	4	2	3
15	1	0	1	0	1	1	1	1	1	1	4
16	1	1	1	1	3	2	3	3	2	1	2(3)
17	1	1	1	2	3	3	3	2	2	1	1
18	3	2	2	1	5	3	4	6	3	5	7(8)
19	0	0	0	4	0	0(1)	0	0	0	0	0
20	2	2	2	1	5(7)	2	3	8	4	3(5)	6
21	3	2	2	1	6(7)	2	4	6	5	5	6
22	2	0	3	0	5	1	2	3	2	5	3

	12	13	14	15	16	17	18	19	20	21
13	4									
14	5	6								
15	2	3	3							
16	4	3	4	2						
17	2	2	2	4	3					
18	8	3	6	5	5(6)	2				
19	0	0	0	0	0	0	1			
20	5	2	5	3	5	2	7(9)	0		
21	6	2	4	1	3	2	6	0	6	
22	3	1	1	1	1	1	2	0	4	5(6)

1. 2. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,2) [**2**]
2. (0,0) [**0**]
3. (0,0) [**0**]
4. (0,1) [**1**]
5. (1,12) [**13**]
6. (0,0) [**0**]
7. (1,5) [**6**]
8. (2,8) [**10**]
9. (2,4) [**6**]
10. (2,5) (2,6) [**7**] [**8**]
11. (4,5) [**9**]
12. (7,6) [**13**]
13. (2,1) [**3**]
14. (5,4) [**9**]
15. (1,2) [**3**]
16. (2,2) [**4**]
17. (1,0) [**1**]
18. (9,2) [**11**]
19. (1,0) [**1**]
20. (8,2) (9,2) [**10**] [**11**]
21. (10,1) [**11**]
22. (4,-) [**4**]

1. 2. 4. Texto resultante tras eliminar las oraciones marginales.

1. During the prenatal period, the fetus is supplied with minerals and trace elements via maternal circulation and controlled placental transfer. **4**. Infancy is further characterized by an extremely high rate of synthesis of tissue cells, which leads to the infant's doubling its birth mass in a period of only 4 months. **5**. The infant's trace element requirement is supplied not only by amounts transferred via the mother's milk in specific binding forms or by formula, but also from prenatal stores. **7**. Trace elements must be added to pre-term infants' formulas to satisfy their higher dietary requirements.

8. In early infancy, breast milk or cow's-milk-based and soy- based formulas are the only dietary source of essential trace elements. **9**. The mother's milk provides an adequate supply of all micronutrients for the full-term infant. **10**. The concentrations and the fairly well defined binding pattern of the essential trace elements in human milk are therefore used as a reference. **11**. On the other hand, the trace elements chromium, copper, zinc, iron, manganese, molybdenum, iodine and, recently, selenium have been added to the formulas as compounds and at concentration levels that are different from those found in breast milk. **12**. With the sole exception of selenium, the trace element intake of infants via formula is significantly higher than via breast milk. **13**. The iron supply was found to be up to 20 times higher despite the fact that the high hemoglobin of newborns forms a reservoir. **14**. In the case of manganese, the supply of the formula- fed infant can be as much as 1000 times higher than that of the breast-fed infant. **15**. During the first months of life such high values are critical with respect to known Fe-Zn, Fe-Cu and Mn-Fe interactions. **16**. As negative effects of high iron supplementation (> 4 mg 1-^{1}) significantly lower levels of glutathione peroxidase in serum and superoxide dismutase in erythrocytes have been observed in formula-fed infants. **17**. In addition given the prooxidant effects of excessive amounts of iron in the iron(II) form, the balance between the formation and inactivation of free radicals generated by the rapid growth rate of premature newborns during the first months of life might be disturbed.

18. In spite of the significantly lower trace element intake of breast-fed infants, their serum concentrations of the essential elements Cu, Fe and Zn are comparable to those of formula-fed infants. **19**. Further, mass and length gains, as developmental parameters, were comparable for the two groups over a period of 4 months. **20**. Because no signs of deficiency were observed in breast-fed infants, the bio availibility of copper, iron and zinc of the special binding proteins in human milk must be considerably higher than that in cow's milk or soy-based formula.

21. In the light of these facts, we considered it of importance to investigate the concentration, chemical form and nutritive value of trace elements in both human milk and infant formulas, with our ultimate goal being to obtain as much information as possible about adequate infant nutrition. **22**. We therefore carried out speciation studies to determine the binding form of trace elements in these nutritive fluids, combining methods for protein separation with methods for trace element determination in the eluted fractions.

1. 3. Texto 3: *Analysis of carbonaceous aerosols: interlaboratory comparison.*

1. Many workplace and environmental settings contain aerosols composed primarily of carbon. **2**. Cabonaceous aerosols encountered in these settings include asphalt fumes, oil mists, cigarette and wood smokes, carbon black, and diesel exhaust. **3**. Some of these aerosols are known or suspect human carcinogens (e,g., cigarette smoke and diesel exhaust, respectively) and have been linked to other adverse health effects (e.g., asthma, heart disease) **4**. Exposure to diesel exhaust is of particular concern because it has been classified a probable human carcinogen and diesel equipment use is widespread in (e,g., trucking, transit, mining, railroads, agriculture). **5**. An estimated 1.35 million workers are routinely exposed to diesel engine exhaust and exposures in some industries are relatively high (e.g., >0.5 mg m^{-3}). **6**. Unfortunately, health-based exposure criteria for diesel particulate have not yet been established. **7**. A Threshold Limit Value (TLV) of 150 μ/m^{-3} has been proposed but has not yet been adopted.

8. Particulate diesel exhaust, like fine particulate air pollution in general, also is of concern with respect to noncancer health effects. **9**. The US Environmental Protection Agency (EAP) has proposed an inhalation Reference Concentration (RfC) of 5 μ/m^{-3} for the noncancer health effects of diesel exhaust and the State of California Office of Environmental Health Hazard Assessment (OEHHA) has proposed adoption of this value for the chronic inhalation reference exposure level in California. **10**. The RfC for a substance is an estimate of a daily exposure of humans, including sensitive subgroups, that is 'likely to be without appreciable risk of deleterious effects during a lifetime of exposure'. **11**. Comprehensive reviews of the potential health effects of exposure to diesel exhaust exposure have been recently published.

12. Because diesel exhaust is a chemically complex mixture containing thousands of compounds, some measure of exposure must be selected. **13**. Given the high carbon content of diesel particulate, a carbon-based method was investigated. **14**. The method, recently published as National Institute for safety and Health (NIOSH) Method 5040, is based on an evolved gas analysis technique called the 'thermal-optical method'. **15**. With this technique, speciation of organic and elemental carbon (OC and EC, respectively) is accomplished through temperature and atmosphere control and by an optical feature that corrects for pyrolytically generated carbon, or 'char', formed during the analysis of some materials. **16**. Although both organic and elemental carbon are determined in the analysis, EC is the superior marker of diesel particulate because it constitutes a large fraction of the particulate mass, it can be quantified at background (i.e., environmental) levels, and its only significant source in most workplaces is the diesel engine. **17**. Different approaches can be applied for OC-EC analysis, but a thermal-optical method was selected because the instrumentation has desirable design features not present in other carbon analyzers. **18**. An in-depth discussion on Method 5040, including both technical and exposure-related issues, has been published elsewhere.

19. In a previous study, different methods gave widely varying results in the speciation of organic and elemental carbon. **20**. For this reason, OC-EC methods are considered operational in the sense that the method itself defines the analyte. **21**. Given its operational nature, it is important to examine interlaboratory variability of the method; however, when the thermal-optical method was initially evaluated, only one instrument was available, so interlaboratory variability could not be examined. **22**. More recently, additional instruments were constructed by a commercial laboratory and an interlaboratory comparison was conducted. **23**. Seven laboratories that perform thermal-optical analysis participated in the comparison. **24**. Six of them used NIOSH Method 5040 (i.e., they used identical instrumentation and thermal program), while the seventh used a variation on the method. **25**. Another thermal technique based on coulometric detection of CO_2 is being used in Europe for occupational monitoring of diesel particulate. **26**. Four laboratories employing the coulometric method also participated in the interlaboratory comparison, giving a total of eleven laboratories (seven thermal-optical and four coulometric). **27**. Discussion of the methods and a summary of the results of the intercomparison are reported in this paper.

1. 3. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. settings – settings **rs**. aerosols – aerosols **rc**. carbon – carbonaceous				
3	**rs**. aerosols – aerosols	**rs**. aerosols – aerosols **rs**. cigarette – cigarette **rs**. smokes – smoke **rs**. diesel – diesel **rs**. exhaust – exhaust			
4		**rs**. diesel – diesel **rs**. exhaust – exhaust	**rs**. human – human **rs**. carcinogens – carcinogen **rs**. diesel – diesel **rs**. exhaust – exhaust		
5		**rs**. diesel – diesel **rs**. exhaust – exhaust	**tr**. human – workers **rs**. diesel – diesel **rs**. exhaust – exhaust	**rs**. exposure – exposures **rs**. diesel – diesel **rs**. exhaust – exhaust **tr**. human – workers **rs**. industry – industries	
6		**rs**. diesel – diesel	**rs**. diesel – diesel **rs**. health – health	**rs**. exposure – exposure **rs**. diesel – diesel	**rs**. exposures – exposure **rs**. diesel – diesel
7					
8		**rs**. diesel – diesel **rs**. exhaust – exhaust	**rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. health – health **rs**. effects – effects	**rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. concern – concern	**rs**. diesel – diesel **rs**. exhaust – exhaust
9	**rs**. environmental – environmental*	**rs**. diesel – diesel **rs**. exhaust – exhaust	**rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. health – health **rs**. effects – effects	**rs**. exposure – exposure **rs**. diesel – diesel **rs**. exhaust – exhaust	**rs**. exposure – exposure **rs**. diesel – diesel **rs**. exhaust – exhaust

	1	2	3	4	5
10			**rs**. human – humans **psm**. adverse – deleterious **rs**. effects – effects	**rs**. exposure – exposure **rs**. human – humans	**hip**. workers – humans **rs**. exposures – exposure
11		**rs**. diesel – diesel **rs**. exhaust – exhaust	**rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. health – health **rs**. effects – effects	**rs**. exposure – exposure **rs**. diesel – diesel **rs**. exhaust – exhaust	**rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. exposures – exposure
12	**rs**. contain – containing*	**rs**. diesel – diesel **rs**. exhaust – exhaust	**rs**. diesel – diesel **rs**. exhaust – exhaust	**rs**. exposure – exposure **rs**. diesel — diesel **rs**. exhaust – exhaust	**rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. exposures – exposure
13	**rc**. contain – content **rs**. carbon – carbon	**rc**. carbonaceous — carbon **rs**. diesel – diesel	**rs**. diesel – diesel	**rs**. diesel – diesel	**rs**. diesel – diesel
14					
15	**rs**. carbon — carbon	**rc**. carbonaceous – carbon			
16	**rs**. workplace – workplaces **rs**. environmental – environmental **hip**. aerosols – mass **rs**. carbon – carbon	**rc**. carbonaceous - carbon **hip**. aerosols – mass **rs**. diesel – diesel	**hip**. aerosols – mass **rs**. diesel – diesel	**rs**. diesel – diesel	**rs**. diesel – diesel **rs**. engine – engine
17	**rs**. carbon – carbon	**rc**. carbonaceous – carbon			
18				**rs**. exposure – exposure	**rs**. exposures – exposure
19	**rs**. carbon – carbon	**rc**. carbonaceous – carbon			
20	**psm**. carbon – C	**pc**. carbonaceous – C (**carbon**)			
21					
22					
23					
24					
25		**rs**. diesel – diesel	**rs**. diesel – diesel	**rs**. diesel – diesel	**rs**. diesel – diesel
26					
27					

	6	7	8	9	10
7					
8	**rs**. health – health **rs**. diesel – diesel **rs**. particulate – particulate				
9	**rs**. health – health **rs**. exposure – exposure **rs**. diesel – diesel	**rs**. value – value* **rs**. proposed – proposed **rc**. adopted – adoption	**rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. noncancer – noncancer **rs**. health – health **rs**. effects – effects		
10	**rs**. exposure – exposure		**rs**. effects – effects	**rs**. RfC – RfC **rs**. effects – effects **rs**. exposure – exposure	
11	**rs**. health – health **rs**. exposure – exposure **rs**. diesel – diesel		**rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. health – health **rs**. effects – effects	**rs**. health – health **rs**. effects – effects **rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. exposure – exposure	**rs**. effects – effects **rs**. exposure – exposure
12	**rs**. exposure – exposure **psm**. criteria – measure **rs**. diesel – diesel		**rs**. diesel – diesel **rs**. exhaust – exhaust	**rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. exposure – exposure	**psm**. substance – compounds **rs**. exposure – exposure
13	**rs**. diesel – diesel **rs**. particulate – particulate		**rs**. diesel – diesel **rs**. particulate – particulate	**rs**. diesel – diesel	
14	**rs**. health – health*		**rs**. health – health*	**rs**. health – health*	
15					
16	**rs**. diesel – diesel **rs**. particulate – particulate		**rs**. diesel – diesel **rs**. particulate – particulate	**rs**. diesel – diesel **rs**. level – levels	
17					
18	**rs**. exposure – exposure			**rs**. exposure – exposure	**rs**. exposure – exposure
19					
20					
21					
22					

	6	7	8	9	10
23					
24					
25	**rs**. diesel – diesel **rs**. particulate – particulate		**rs**. diesel – diesel **rs**. particulate – particulate	**rs**. diesel – diesel	
26					
27					

	11	12	13	14	15
12	**rs**. diesel – diesel **rs**. exhaust – exhaust **rs**. exposure – exposure				
13	**rs**. diesel – diesel	**rs**. diesel – diesel			
14	**rs**. health – health* **rs**. recently – recently* **rs**. published – published*		**rs**. method – method		
15			**rs**. carbon – carbon	**rs**. analysis – analysis **rs**. technique – technique **rs**. optical – optical	
16	**rs**. diesel – diesel	**rs**. diesel – diesel	**rs**. carbon – carbon **rs**. diesel – diesel **rs**. particulate – particulate	**rs**. analysis – analysis	**rs**. organic – organic **rs**. elemental – elemental **rs**. carbon – carbon **rs**. analysis – analysis
17		**rs**. selected – selected*	**rs**. carbon – carbon **rs**. method – method	**rs**. method – method **rs**. analysis – analysis **rs**. thermal – thermal **rs**. optical – optical	**rs**. OC – OC **rs**. EC – EC **rs**. optical – optical **rs**. analysis – analysis
18	**rs**. exposure – exposure **rs**. published – published	**rs**. exposure – exposure	**rs**. method – method **pc**. investigated – discusión (**investigation**)	**rs**. method – method **rs**. published – published **rs**. 5040 – 5040 **rc**. technique – technical	**rc**. technique – technical
19			**rs**. carbon – carbon **rs**. method – methods **pc**. investigated – study (**investigation**)	**rs**. method – methods	**rs**. speciation – speciation **rs**. organic – organic **rs**. elemental – elemental **rs**. carbon – carbon
20			**psm**. carbon – C **rs**. method – methods	**rs**. method – methods	**psp**. technique – methods **rs**. OC – OC **rs**. EC – EC

	11	12	13	14	15
21			**rs**. method – method **psm**. investigated – examined	**rs**. thermal – thermal **rs**. optical – optical **rs**. method – method	**rs**. optical – optical
22					
23				**rs**. analysis – analysis **rs**. thermal – thermal **rs**. optical – optical	**psp**. is accomplished – perform **rs**. optical – optical **rs**. analysis – analysis
24			**rs**. method – method	**rs**. NIOSH – NIOSH **rs**. method – method **rs**. 5040 – 5040 **rs**. thermal – thermal	
25	**rs**. diesel – diesel	**rs**. diesel – diesel	**rs**. diesel – diesel **rs**. particulate – particulate **rs**. based – based*	**rs**. based – based **rs**. technique – technique **rs**. thermal – thermal	**rs**. technique – technique
26			**rs**. method – method*	**tr**. technique – method **rs**. thermal – thermal **rs**. optical – optical	**rs**. optical – optical
27	**psm**. published – reported*		**rs**. method – methods	**rs**. method – method **psm**. published – reported	

	16	17	18	19	20
17	**psp**. organic carbon – OC **rs.** EC – EC **rs**. analysis – analysis				
18		**rs**. method – method			
19	**rs**. organic – organic **rs**. elemental – elemental **rs**. carbon – carbon	**psp**. OC – organic carbon **psp**. EC – elemental carbon **rs**. method – methods	**psm**. discussion – study **rs**. method – methods		
20	**psp**. organic carbon – OC **rs**. EC – EC	**rs**. OC – OC **rs**. EC – EC **rs**. method – methods	**rs**. method – methods	**d**. oración 19 – this **rs**. methods – methods **psp**. organic carbon – OC **psp**. elemental carbon – EC	
21		**rs**. thermal – thermal **rs**. optical – optical **rs**. method – method **rc**. instrumentation – instrument	**rs**. method – method	**rs**. methods – method	**rs**. operational – operational **rs**. method – method
22		**rc**. instrumentation – instruments			
23	**rs**. analysis – analysis	**rs**. analysis – analysis **rs**. thermal – thermal **rs**. optical – optical			
24		**rs**. thermal – thermal **rs**. method – method **rs**. instrumentation – instrumentation	**rs**. method – method **rs**. 5040 – 5040	**rs**. methods – method	**rs**. method – method
25	**rs**. diesel – diesel **rs**. particulate – particulate	**rs**. thermal – thermal			
26		**rs**. thermal – thermal **rs**. optical – optical **rs**. method – method	**rs**. method – method*	**rs**. methods – method	**rs**. method – method
27		**rs**. method – methods	**rs**. discussion – discussion **rs**. method – methods **psm**. published – reported	**psm**. study – discussion **rs**. methods – methods **rs**. results – results	**rs**. method – methods

	21	22	23	24	25	26
22	**rs**. interlaboratory – interlaboratory **rs**. instrument – instruments					
23	**rc**. interlaboratory – laboratories **rs**. thermal – thermal **rs**. optical – optical	**rs**. laboratory – laboratories **rs**. comparison – comparison **psm**. conducted – perform*				
24	**rc**. variability – variation **rs**. method – method **rs**. thermal – thermal **rc**. instrument – instrumentation	**rc**. instruments – instrumentation	**s**. laboratories – them **rs**. thermal – thermal			
25	**rs**. thermal – thermal		**rs**. thermal – thermal	**rs**. used – used **rs**. thermal – thermal		
26	**rs**. interlaboratory – interlaboratory **rs**. method – method **rs**. thermal – thermal **rs**. optical – optical	**rs**. laboratory – laboratories **rs**. interlaboratory – interlaboratory **rs**. comparison – comparison	**rs**. seven – seven **rs**. laboratories – laboratories **rs**. thermal – thermal **rs**. optical – optical **rs**. participated – participated **rs**. comparison – comparison	**psm**. used – employing **rs**. method – method **rs**. thermal – thermal	**rs**. thermal – thermal **psp**. technique – method **rs**. coulometric – coulometric **psm**. used – employing	
27	**rs**. method – methods	**rc**. comparison – intercomparison	**rc**. comparison – intercomparison	**rs**. method – methods		**rs**. method – methods **rc**. comparison – inetercomparison

1. 3. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11
2	3										
3	1	5									
4	0	2	4								
5	0	2	3	5							
6	0	1	2	2	2						
7	0	0	0	0	0	0					
8	0	2	4	3	2	3	0				
9	0(1)	2	4	3	3	3	2(3)	5			
10	0	0	3	2	2	1	0	1	3		
11	0	2	4	3	3	3	0	4	5	2	
12	0(1)	2	2	3	3	3	0	2	3	2	3
13	2	2	1	1	1	2	0	2	1	0	1
14	0	0	0	0	0	0(1)	0	0(1)	0(1)	0	0(3)
15	1	1	0	0	0	0	0	0	0	0	0
16	4	3	2	1	2	2	0	2	2	0	1
17	1	1	0	0	0	0	0	0	0	0	0
18	0	0	0	1	1	1	0	1	1	1	2
19	1	1	0	0	0	0	0	0	0	0	0
20	1	1	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0
25	0	1	1	1	1	2	0	2	1	0	1
26	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0(1)

	12	13	14	15	16	17	18	19	20	21	22
13	1										
14	0	1									
15	0	1	3								
16	1	3	1	4							
17	0(1)	2	4	4	3						
18	1	2	4	1	0	1					
19	0	3	1	4	3	3	2				
20	0	2	1	3	2	3	1	4			
21	0	2	3	1	0	4	1	1	2		
22	0	0	0	0	0	1	0	0	0	2	
23	0	0	3	3	1	3	0	0	0	3	2(3)
24	0	1	4	0	0	3	2	1	1	4	1
25	1	2(3)	3	1	2	1	0	0	0	1	0
26	0	0(1)	3	1	0	3	0(1)	1	1	4	3
27	0	1	2	0	0	1	3	3	1	1	1

	23	24	25	26
24	2			
25	1	2		
26	6	3	4	
27	1	1	0	2

1. 3. 3. Tabla representativa del número de conexiones entre oraciones

1. (-,2) [2]
2. (1,2) [3]
3. (1,6) [7]
4. (1,5) [6]
5. (2,3) [5]
6. (0,4) [4]
7. (0,0) (0,1) [0] [1]
8. (3,2) [5]
9. (5,3) (6,3) [8] [9]
10. (2,0) [2]
11. (6,1) (6,2) [7] [8]
12. (5,0) [5]
13. (0,2) (0,3) [2] [3]
14. (0,8) (1,8) [8] [9]
15. (1,5) [6]
16. (4,2) [6]
17. (3,6) [9]
18. (1,1) [2]
19. (4,2) [6]
20. (3,0) [3]
21. (2,3) [5]
22. (0,1) (0,2) [1] [2]
23. (4,1) (5,1) [5] [6]
24. (3,1) [4]
25. (1,1) (2,1) [2] [3]
26. (7,0) [7]
27. (2,-) [2]

1. 3. 4. Texto resultante tras eliminar las oraciones marginales.

1. Many workplace and environmental settings contain aerosols composed primarily of carbon. **2**. Cabonaceous aerosols encountered in these settings include asphalt fumes, oil mists, cigarette and wood smokes, carbon black, and diesel exhaust. **3**. Some of these aerosols are known or suspect human carcinogens (e,g., cigarette smoke and diesel exhaust, respectively) and have been linked to other adverse health effects (e.g., asthma, heart disease) **4**. Exposure to diesel exhaust is of particular concern because it has been classified a probable human carcinogen and diesel equipment use is widespread in (e,g., trucking, transit, mining, railroads, agriculture). **5**. An estimated 1.35 million workers are routinely exposed to diesel engine exhaust and exposures in some industries are relatively high (e.g., >0.5 mg m^{-3}). **6**. Unfortunately, health-based exposure criteria for diesel particulate have not yet been established. [1]**8**. Particulate diesel exhaust, like fine particulate air pollution in general, also is of concern with respect to noncancer health effects. **9**. The US Environmental Protection Agency (EAP) has proposed an inhalation Reference Concentration (RfC) of 5 μ/m^{-3} for the noncancer health effects of diesel exhaust and the State of California Office of Environmental Health Hazard Assessment (OEHHA) has proposed adoption of this value for the chronic inhalation reference exposure level in California. **10**. The RfC for a substance is an estimate of a daily exposure of humans, including sensitive subgroups, that is ‘likely to be without appreciable risk of deleterious effects during a lifetime of exposure’. **11**. Comprehensive reviews of the potential health effects of exposure to diesel exhaust exposure have been recently published.

12. Because diesel exhaust is a chemically complex mixture containing thousands of compounds, some measure of exposure must be selected. **13**. Given the high carbon content of diesel particulate, a carbon-based method was investigated. **14**. The method, recently published as National Institute for safety and Health (NIOSH) Method 5040, is based on an evolved gas analysis technique called the ‘thermal-optical method’. **15**. With this technique, speciation of organic and elemental carbon (OC and EC, respectively) is accomplished through temperature and atmosphere control and by an optical feature that corrects for pyrolytically generated carbon, or ‘char’, formed during the analysis of some materials. **16**. Although both organic and elemental carbon are determined in the analysis, EC is the superior marker of diesel particulate because it constitutes a large fraction of the particulate mass, it can be quantified at background (i.e., environmental) levels, and its only significant source in most workplaces is the diesel engine. **17**. Different approaches can be applied for OC-EC analysis, but a thermal-optical method was selected because the instrumentation has desirable design features not present in other carbon analyzers. **18**. An in-depth discussion on Method 5040, including both technical and exposure-related issues, has been published elsewhere.

19. In a previous study, different methods gave widely varying results in the speciation of organic and elemental carbon. **20**. For this reason, OC-EC methods are considered operational in the sense that the method itself defines the analyte. **21**. Given its operational nature, it is important to examine interlaboratory variability of the method; however, when the thermal-optical method was initially evaluated, only one instrument was available, so interlaboratory variability could not be examined. **22**. More recently, additional instruments were constructed by a commercial laboratory and an interlaboratory comparison was conducted. **23**. Seven laboratories that perform thermal-optical analysis participated in the comparison. **24**. Six of them used NIOSH

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[1] La oración 7 establece un una conexión mediante un enlace dudoso. Puede eliminarse y el texto presenta la misma coherencia que el texto original.

Method 5040 (i.e., they used identical instrumentation and thermal program), while the seventh used a variation on the method. **25**. Another thermal technique based on coulometric detection of CO_2 is being used in Europe for occupational monitoring of diesel particulate. **26**. Four laboratories employing the coulometric method also participated in the interlaboratory comparison, giving a total of eleven laboratories (seven thermal-optical and four coulometric). **27**. Discussion of the methods and a summary of the results of the intercomparison are reported in this paper.

1. 4. Texto 4: *High-precision conductometric detector for the measurement of atmospheric carbon dioxide*.

1. The recent increase in atmospheric $C0_2$ mixing ratio is one of the most significant changes in the trace gas composition of the atmosphere. **2**. The observed 30% rise, from 280 to 360 ppmv since the beginning of the industrial revolution, accounts for only ~50% of the $C0_2$ released into the atmosphere from anthropogenic sources. **3**. The remainder of the $C0_2$ released from fossil fuel burning and deforestation is assumed to have been absorbed by the oceans and terrestrial biosphere. **4**. Direct measurements of $C0_2$ fluxes are needed in order to determine the strengths of these sinks and to close regional and global carbon budgets. **5**. In addition, flux measurements are necessary to improve the global circulation models that predict future $C0_2$ concentrations and climate change.

6. Currently, $C0_2$ concentrations are determined either by collecting air in flasks for analysis offsite or by continuous monitoring in the field. **7**. Offsite analysis is usually performed by GC/TCD, GC/FID with a methanizer, or nondispersive infrared absorption (NDIR). **8**. The disadvantages of batch analysis include sample storage and transport problems, limitation of the number of measurements by the number of available flasks, and a significant time lag between flask sample collection and analysis. **9**. For example, in a recent field campaign aimed at measuring the fluxes of greenhouse gases in the Amazon rain forest of Peru, we were limited to six flask samples to characterize each vertical profile through the convective boundary layer. **10**. Continuous monitoring is almost exclusively performed by NDIR **11**. The limitations and errors associated with open- and closed-path NDIR analyzers have been extensively discussed by Leuning and Judd. **12**. Disadvantages of in situ analysis by NDIR include instrument expense (and therefore limited sampling sites) and the inability to use NDIR from kite or small balloon platforms because of excessive weight and power requirements.

13. The new technique described here for measurement of $C0_2$ mixing ratios is based on the increase in conductivity that occurs when deionized water makes contact with air by use of microporous hollow fiber membranes. **14**. The detector is sufficiently small and lightweight to be operated from kite and balloon platforms for continuous vertical profiling of the atmosphere and has adequate precision and accuracy to determine landscape-scale fluxes of $C0_2$ from vertical profile measurements.

15. There are previous reports of conductometric techniques for measuring gas-phase $C0_2$. **16**. Initial designs were cumbersome and slow because they incorporated large amounts of air and water and required time for degassing. **17**. Van Kempen and Kreuzer and Himpler et al. used microsensors and semipermeable membranes but did not study atmospheric levels of $C0_2$. **18**. Symanski et al. designed microsensors for atmospheric $C0_2$ and were successful at measuring concentrations that would be found in highly polluted air. **19**. The instruments measured $C0_2$ mixing ratios in the range 0-3% and were not tested extensively at concentrations characteristic of "clean" air (~350-370 ppmv). **20**. Furthermore, the continuous microsensor developed by Symanski et al exhibited a RSD of ~2%. **21**. This precision is adequate for polluted air measurements but does not meet the precision required (~0.1%) for monitoring the small concentration variations that are found in relatively unpolluted air, e.g., in the atmosphere above a forest canopy.

1. 4. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**psm**. increase – rise **rs**. CO_2 - CO_2 **rs**. atmosphere – atmosphere				
3	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2 **rs**. released – released **e**. into the atmosphere – 0 **hip**. antr. sources – fossil ...deforestat.			
4	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2 **hip**. fuel – carbon **hip**. oceans ... biosphere – sinks		
5	**rs**. CO_2 - CO_2 **psm**. mixing ratio – concentrations **rs**. changes – change*	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2	**rs**. measurements – measurements **rs**. CO_2 - CO_2 **rs**. fluxes – flux **psm**. needed – necessary	
6	**psm**. mixing ratio – concentrations **rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2 **rs**. determine – determined	**rs**. CO_2 - CO_2 **rs**. concentrations – concentrations
7					
8				**rs**. measurements – measurements	**rs**. measurements – measurements
9	**hip**. CO_2 – grennhouse gases	**hip**. CO_2 – greenhouse gases	**hip**. CO_2 – greenhouse gases	**rc**. measurements – measuring **hip**. CO_2 – greenhouse gases **rs**. fluxes – fluxes	**rs**. flux – fluxes **rc**. measurements – measuring **hip**. CO_2 – greenhouse gases
10					
11					
12					
13	**rs**. CO_2 - CO_2 **rs**. mixing – mixing **rs**. ratio – ratios	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2	**rs**. measurements – measurement **rs**. CO_2 - CO_2	**psm**. concentrations – mixing ratios **rs**. measurements – measurement **rs**. CO_2 - CO_2

	1	2	3	4	5
14	**rs**. CO_2 - CO_2 **rs**. atmosphere – atmosphere	**rs**. CO_2 - CO_2 **rs**. atmosphere – atmosphere	**rs**. CO_2 - CO_2	**rs**. measurements – measurements **rs**. CO_2 - CO_2 **rs**. fluxes – fluxes **rs**. determine – determine	**rs**. flux – fluxes **rs**. measurements – measurements **rs**. CO_2 - CO_2
15	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2	**rc**. measurements measuring **rs**. CO_2 - CO_2	**rc**. measurements – measuring **rs**. CO_2 - CO_2
16					
17	**rs**. CO_2 - CO_2 **psm**. mixing ratio – levels **rc**. atmosphere – atmospheric	**rs**. CO_2 - CO_2 **rc**. atmosphere – atmospheric	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2 **psm**. concentrations – levels
18	**rs**. CO_2 - CO_2 **psm**. mixing ratio – concentrations **rc**. atmosphere – atmospheric	**rs**. CO_2 - CO_2 **rc**. atmosphere – atmospheric	**rs**. CO_2 - CO_2	**rc**. measurements measuring **rs**. CO_2 - CO_2	**rc**. measurements measuring **rs**. CO_2 - CO_2 **rs**. concentrations – concentrations
19	**rs**. CO_2 - CO_2 **rs**. mixing – mixing **rs**. ratio – ratios	**rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2	**rc**. measurements measured **rs**. CO_2 - CO_2	**rc**. measurements measured **rs**. CO_2 - CO_2 **rs**. concentrations – concentrations
20					
21	**rs**. **psm**. mixing ratio – concentrations **psm**. changes – variations **rs**. atmosphere – atmosphere	**rs**. atmosphere – atmosphere		**rs**. measurements – measurements	**rs**. measurements – measurements **rs**. concentrations – concentration **psm**. change – variations*

	6	7	8	9	10
7	**rs**. analysis – analysis **rs**. offsite – offsite				
8	**rc**. collecting – collection **rs** flasks – flasks **rs**. analysis – analysis **psm**. offsite – batch	**psm**. offsite – batch **rs**. analysis – analysis			
9	**hip**. CO_2 – greenhouse gases **rs**. flasks – flask **pc**. analysis – characterize (**analize**)	**pc**. analysis – characterize (**analize**)	**rc**. limitation – limited **rc**. measurements – measuring **rs**. flasks – flask **rs**. sample – samples **pc**. analysis – characterize (**analize**)		
10	**rs**. continuous – continuous **rs**. monitoring – monitoring **e**. in the field – 0	**a**. offsite – continuous monitoring **rs**. performed performed **rs**. NDIR – NDIR	**a**. batch – continuous monitoring		
11	**rc**. analysis – analyzers	**rc**. analysis – analyzers **rs**. NDIR – NDIR	**rc**. analysis – analyzers **rs**. limitation – limitations	**rc**. limited – limitations **pc**. characterize – analyzers (**analize**)	**rs**. NDIR – NDIR
12	**rs**. analysis – analysis **psm**. continuous monitoring in the field – in situ	**a**. offsite – in situ **rs**. analysis – analysis **rs**. NDIR – NDIR	**rs**. disadvantages – disadvantages **a**. batch – in situ **rs**. analysis – analysis **rs**. include – include **rc**. limitation – limited **rc**. sample – sampling	**rs**. limited – limited **rc**. samples – sampling **pc**. characterize – analysis (**analize**)	**psm**. continuous monitoring – in situ **rs**. NDIR – NDIR
13	**rs**. CO_2 - CO_2 **psm**. concentrations – mixing ratios **rs**. air – air		**rs**. measurements – measurement	**rc**. measuring – measurement **tr**. greenhouse gases - CO_2	

	6	7	8	9	10
14	**rs**. CO_2 - CO_2 **rs**. determined – determine **rs**. continuous – continuous		**rs**. measurements – measurements	**rc**. measuring – measurements **rs**. fluxes – fluxes **tr**. greenhouse gases – CO_2 **rs**. vertical – vertical **rs**. profile – profile	
15	**rs**. CO_2 - CO_2		**rc**. measurements – measuring	**rs**. measuring – measuring **tr**. greenhouse gases – CO_2	
16					
17	**psm**. concentrations – levels **rs**. CO_2 - CO_2			**tr**. greenhouse gases – CO_2	
18	**rs**. CO_2 - CO_2 **rs**. concentrations – concentrations **rs**. air – air		**rc**. measurements – measuring	**rs**. measuring – measuring **tr**. greenhouse gases – CO_2	
19	**rs**. CO_2 - CO_2 **rs**. concentrations – concentrations **rs**. air – air		**rc**. measurements – measured	**rs**. measuring – measured **tr**. greenhouse gases – CO_2	
20	**rs**. continuous – continuous				**rs**. continuous – continuous
21	**rs**. concentrations – concentration **rs**. air – air **rs**. monitoring – monitoring		**rs**. measurements – measurements	**rc**. measuring – measurements	**rs**. monitoring – monitoring

	11	12	13	14	15
12	**rc**. limitations – limited **rs**. NDIR – NDIR **rc**. analyzers – analysis				
13					
14		**psm**. use – operated **rs**. kite – kite **rs**. balloon – balloon **rs**. platforms – platforms **a**. excessive weight – lightweight	**rs**. measurement – measurements **rs**. CO_2 - CO_2		
15			**rs**. technique – techniques **pc**. described – reports **(description)** **rc**. measurement – measuring **rs**. CO_2 - CO_2 **rc**. conductivity – conductometric	**rs**. CO_2 - CO_2 **rc**. measurements – measuring	
16			**rs**. water – water **rs**. air – air		
17			**rs**. CO_2 - CO_2 **psm**. mixing ratios – levels **rc**. use – used **rs**. membranes – membranes	**rc**. atmosphere – atmospheric **rs**. CO_2 - CO_2	**rs**. CO_2 - CO_2
18			**rc**. measurement – measuring **rs**. CO_2 - CO_2 **psm**. mixing ratios – concentrations **rs**. air – air	**rc**. atmosphere – atmospheric **rs**. CO_2 - CO_2 **rc**. measurements – measuring	**rs**. measuring – measuring **rs**. CO_2 - CO_2
19			**rc**. measurement – measured **rs**. CO_2 - CO_2 **rs**. mixing – mixing **rs**. ratios – ratios **rs**. air – air	**rs**. CO_2 - CO_2 **rc**. measurements – measured	**rs**. measuring – measured **rs**. CO_2 - CO_2
20					
21			**rs**. measurement – measurements **psm**. mixing ratios – concentration **rs**. air – air	**rs**. atmosphere – atmosphere **rs**. precision – precision **rs**. measurements – measurements	**rc**. measuring– measurements

	16	17	18	19	20
17					
18	**rc**. designs – designed	**rs**. microsensors – microsensors **rs**. atmospheric – atmospheric **psm**. levels – concentrations **rs**. CO_2 - CO_2			
19		**hip**. microsensors – instruments **psm**. levels – mixing ratios **rs**. CO_2 - CO_2	**hip**. microsensors – instruments **rs**. CO_2 - CO_2 **rs**. measuring – measured **rs**. concentrations – concentrations **a**. polluted – clean **rs**. air – air		
20	**pc**. designs – developed (**designed**)	**rs**. microsensors – microsensor	**rs**. Symanski – Symanski **psm**. designed – developed **rs**. microsensors – microsensor	**tr**. instruments – microsensor	
21		**psm**. levels – concentrations	**rc**. atmospheric – atmosphere **rc**. measuring – measurements **rs**. concentrations – concentration **rs**. found – found **rs**. polluted – polluted **rs**. air – air	**rc**. measured – measurements **rs**. concentrations – concentration **psm**. clean – unpolluted **rs**. air – air	**hip**. RSD – precision

1. 4. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	3													
3	1	4												
4	1	1	3											
5	2(3)	1	1	4										
6	2	1	1	2	2									
7	0	0	0	0	0	2								
8	0	0	0	1	1	4	2							
9	1	1	1	3	3	3	1	5						
10	0	0	0	0	0	3	3	1	0					
11	0	0	0	0	0	1	2	2	2	1				
12	0	0	0	0	0	2	3	6	3	2	3			
13	3	1	1	2	3	3	0	1	2	0	0	0		
14	2	2	1	4	3	3	0	1	5	0	0	5	2	
15	1	1	1	2	2	1	0	1	2	0	0	0	5	2
16	0	0	0	0	0	0	0	0	0	0	0	0	2	0
17	3	2	1	1	2	2	0	0	1	0	0	0	4	2
18	3	2	1	2	3	3	0	1	2	0	0	0	4	3
19	3	1	1	2	3	3	0	1	2	0	0	0	5	2
20	0	0	0	0	0	1	0	0	0	1	0	0	0	0
21	3	1	0	1	2(3)	3	0	1	1	1	0	0	3	3

	15	16	17	18	19	20
16	0					
17	1	0				
18	2	1	4			
19	2	0	3	6		
20	0	1	1	3	1	
21	1	0	1	6	4	1

1. 4. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,6) [**6**] (-,7) [**7**]	**2**. (1,1) [**2**]	**3**. (1,1) [**2**]
4. (1,3) [**4**]	**5**. (1,5) [**6**] (2,6) [**8**]	**6**. (0,8) [**8**]
7. (0,2) [**2**]	**8**. (1,2) [**3**]	**9**. (4,2) [**6**]
10. (2,0) [**2**]	**11**. (0,1) [**1**]	**12**. (4,1) [**5**]
13. (3,5) [**8**]	**14**. (5,2) [**7**]	**15**. (1,0) [**1**]
16. (0,0) [**0**]	**17**. (2,2) [**4**]	**18**. (6,3) [**9**]
19. (6,1) [**7**]	**20**. (1,0) [**1**]	**21**. (6,-) [**6**] (7,-) [**7**]

1. 4. 4. Texto resultante tras eliminar las oraciones marginales.

1. The recent increase in atmospheric $C0_2$ mixing ratio is one of the most significant changes in the trace gas composition of the atmosphere. **2**. The observed 30% rise, from 280 to 360 ppmv since the beginning of the industrial revolution, accounts for only ~50% of the $C0_2$ released into the atmosphere from anthropogenic sources. **3**. The remainder of the $C0_2$ released from fossil fuel burning and deforestation is assumed to have been absorbed by the oceans and terrestrial biosphere. **4**. Direct measurements of $C0_2$ fluxes are needed in order to determine the strengths of these sinks and to close regional and global carbon budgets. **5**. In addition, flux measurements are necessary to improve the global circulation models that predict future $C0_2$ concentrations and climate change.

6. Currently, $C0_2$ concentrations are determined either by collecting air in flasks for analysis offsite or by continuous monitoring in the field. **7**. Offsite analysis is usually performed by GC/TCD, GC/FID with a methanizer, or nondispersive infrared absorption (NDIR). **8**. The disadvantages of batch analysis include sample storage and transport problems, limitation of the number of measurements by the number of available flasks, and a significant time lag between flask sample collection and analysis. **9**. For example, in a recent field campaign aimed at measuring the fluxes of greenhouse gases in the Amazon rain forest of Peru, we were limited to six flask samples to characterize each vertical profile through the convective boundary layer. **10**. Continuous monitoring is almost exclusively performed by NDIR **11**. The limitations and errors associated with open- and closed-path NDIR analyzers have been extensively discussed by Leuning and Judd. **12**. Disadvantages of in situ analysis by NDIR include instrument expense (and therefore limited sampling sites) and the inability to use NDIR from kite or small balloon platforms because of excessive weight and power requirements.

13. The new technique described here for measurement of $C0_2$ mixing ratios is based on the increase in conductivity that occurs when deionized water makes contact with air by use of microporous hollow fiber membranes. **14**. The detector is sufficiently small and lightweight to be operated from kite and balloon platforms for continuous vertical profiling of the atmosphere and has adequate precision and accuracy to determine landscape-scale fluxes of $C0_2$ from vertical profile measurements.

15. There are previous reports of conductometric techniques for measuring gas-phase $C0_2$. **17**. Van Kempen and Kreuzer and Himpler et al. used microsensors and semipermeable membranes but did not study atmospheric levels of $C0_2$. **18**. Symanski et al. designed microsensors for atmospheric $C0_2$ and were successful at measuring concentrations that would be found in highly polluted air. **19**. The instruments measured $C0_2$ mixing ratios in the range 0-3% and were not tested extensively at concentrations characteristic of “clean” air (~350-370 ppmv). **20**. Furthermore, the continuous microsensor developed by Symanski et al exhibited a RSD of ~2%. **21**. This precision is adequate for polluted air measurements but does not meet the precision required (~0.1%) for monitoring the small concentration variations that are found in relatively unpolluted air, e.g., in the atmosphere above a forest canopy.

1. 5. Texto 5: *Refinement of the borohydride reduction method for trace analysis of dissolved and particulate dimethyl sulfoxide in marine water samples.*

1. Recent interest in dimethyl sulfoxide (DMSO) in the marine environment stems from its widespread occurrence in nature and its potential role in the biogeochemical cycle of dimethyl sulfide (DMS), a key species in the global sulfur cycle and the precursor of climatically active sulfur aerosols in the atmosphere. **2**. However, relatively few measurements of DMSO levels in natural waters have been made to date, essentially because of the scarcity of sufficiently sensitive and selective analytical procedures. **3**. During the past few years, five methods for trace analysis of aqueous DMSO have been reported. **4**. All involve gas chromatography, either via direct injection of the water aliquot or via reduction and subsequent determination of the evolved DMS. **5**. Simó et al. developed a borohydride reduction method which is relatively simple and performs well at nanomolar concentration levels. **6**. When used as part of a sequential protocol, this technique allows analysis of a suite of methylated sulfur compounds, eg., DMS, methanethiol, dimethylsufonipropionate, DMSP), and DMSO, in the same water sample. **7**. The method has been applied successfully in a number of field studies (rfs 10 and 11 and Simó, unpublished work).

8. In this paper, we report on refinements to the borohydride reduction method for DMSO analysis which resulted from adapting the technique for a different sample preparation and GC analytical system to that described by Simó et al. **9**. New insight into the method has been gained, including the need to adjust the proportion of reductant specificity, blank troubleshooting, sample storage, and the first-ever application of the method to analysis of particular DMSO ($DMSO_p$). **10**. This information should be useful for those intending to analyze aqueous DMSO by reduction methods.

1. 5. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. DMSO – DMSO **rc**. nature – natural				
3	**rs**. DMSO – DMSO	**rs**. DMSO – DMSO **pc**. waters – aqueous (**watery**) **rc**. analytical – analysis.			
4	**rs**. DMS – DMS	**rs**. waters – water	**s**. five methods – all **pc**. aqueous – water (**watery**)		
5		**rs**. levels – levels	**rs**. methods – method	**rs**. reduction – reduction	
6	**rs**. DMSO – DMSO **rs**. DMS – DMS **rs**. sulfur – sulfur	**rs**. DMSO – DMSO **rs**. waters – water **rc**. analytical – analysis.	**psm**. methods – technique **rs**. analysis – analysis **pc**. aqueous – water (**watery**) **rs**. DMSO – DMSO	**rs**. water – water **rs**. DMS – DMS	**psm**. method – technique
7			**rs**. methods – method		**rs**. Simó – Simó **rs**. method – method **psm**. well – successfully
8	**rs**. DMSO – DMSO	**rs**. DMSO – DMSO **rs**. analytical – analytical **psp**. procedures – system	**rs**. methods – method **rs**. analysis – analysis **rs**. DMSO – DMSO **rc**. reported –report	**rs**. reduction – reduction	**rs**. Simó – Simó **rs**. borohydride – borohydride **rs**. reduction – reduction **rs**. method – method
9	**rs**. DMSO – DMSO	**rs**. DMSO – DMSO **rc**. analytical – analysis.	**rs**. methods – method **rs**. analysis – analysis **rs**. DMSO – DMSO	**rc**. reduction – reductant	**rs**. method – method
10	**rs**. DMSO – DMSO	**rs**. DMSO – DMSO **pc**. waters – aqueous (**watery**) **rc**. analytical – analyze.	**rs**. methods – methods **rc**. analysis – analyze **rs**. aqueous – aqueous **rs**. DMSO – DMSO	**pc**. water – aqueous (**watery**) **rs**. reduction – reduction	**rs**. reduction – reduction **rs**. method – methods

	6	7	8	9
7	**psm**.. technique – method			
8	**rs**. technique – technique **rs**. analysis – analysis **rs**. DMSO – DMSO **a**. same – different **rs**. sample – sample	**rs**. method – method **rs**. Simó – Simó **psp** work – paper		
9	**psm**.. technique – method **rs**. analysis – analysis **rs**. DMSO – DMSO **rs**. sample – sample	**rs**. method – method **rc**. applied – application	**rc**. reduction – reductant **rs**. method – method **rs**. DMSO – DMSO **rs**. analysis – analysis **rs**. sample – sample	
10	**rc**. used – useful **psm**.. technique – methods **rc**. analysis – analyze **rs**. DMSO – DMSO	**rs**. method – methods	**rs**. reduction – reduction **rs**. method – methods **rs**. DMSO – DMSO **rc**. analysis – analyze	**rs**. method – methods **rc**. reductant – reduction **rc**. analysis – analyze **rs**. DMSO – DMSO

1. 5. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9
2	2								
3	1	3							
4	1	1	2						
5	0	1	1	1					
6	3	3	4	2	1				
7	0	0	1	0	3	1			
8	1	3	4	1	4	5	3		
9	1	2	3	1	1	4	2	5	
10	1	3	4	2	2	4	1	4	4

1. 5. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,0) [**0**]
2. (0,0) [**0**]
3. (0,3) [**3**]
4. (0,0) [**0**]
5. (0,1) [**1**]
6. (1,3) [**4**]
7. (0,0) [**0**]
8. (3,2) [**5**]
9. (2,1) [**3**]
10. (4 -) [**4**]

1. 5. 4. Texto resultante tras eliminar las oraciones marginales.

3. During the past few years, five methods for trace analysis of aqueous DMSO have been reported. **5**. Simó et al. developed a borohydride reduction method which is relatively simple and performs well at nanomolar concentration levels. **6**. When used as part of a sequential protocol, this technique allows analysis of a suite of methylated sulfur compounds, eg., DMS, methanethiol, dimethylsufonipropionate, DMSP), and DMSO, in the same water sample.

8. In this paper, we report on refinements to the borohydride reduction method for DMSO analysis which resulted from adapting the technique for a different sample preparation and GC analytical system to that described by Simó et al. **9**. New insight into the method has been gained, including the need to adjust the proportion of reductant specificity, blank troubleshooting, sample storage, and the first-ever application of the method to analysis of particular DMSO ($DMSO_p$). **10**. This information should be useful for those intending to analyze aqueous DMSO by reduction methods.

1. 6. Texto 6: *Determination of cyanide in whole blood by capillary gas chromatography with cryogenic oven trapping.*

1. Cyanide is known as one of the most rapidly acting and powerful poisons; it inhibits cytochrome oxidase of the mitochondrial respiratory chain. **2**. Suicidal, accidental, or homicidal death by cyanide salts is frequently experienced in forensic toxicological practice. **3**. Several researchers reported that cyanide occasionally played a significant role in the cause of death of fire cases.

4. For analysis of cyanide, the most classical is a colorimetric method with microdiffusion, fluorometric methods were also reported. **5**. Methods using gas chromatography (GC) with electron capture detection (ECD) and with nitrogen-phosphorus detection (NPD) and mass spectrometry (MS), after suitable derivatizations, were reported. **6**. GC measurements of cyanide with NPD without derivatization were usually made using the headspace (HS) method. **7**. In most of these reports, conventional packed columns, which give relatively low sensitivity and poor separation, were used. **8**. With wide-bore capillary columns, only a 0.5-mL volume of the HS vapor can be injected; with medium-bore capillary columns, split injection giving less than 5% of efficiency has to be used. **9**. Solid-phase microextraction has been applied to analysis of cyanide in human whole blood.

10. Recently, a microcomputer-controlled device for cooling oven temperatures below 0º C has become available for new types of GC instruments. **11**. It was originally designed for rapid cooling of the oven to reduce time for analysis. **12**. This new device has been applied for determining chloroform and methylene chloride in blood.

13. In this paper, we have established a new GC technique using cryogenic oven for measuring cyanide in whole blood without any complicated pre-treatment; as much as 5 mL of the HS vapor for cyanide can be introduced without any loss into a medium-bore capillary column by use of a low oven temperature. **14**. This means that 10-100 times higher sensitivity can be obtained by this method as compared with that of the previous methods.

1. 6. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. cyanide – cyanide				
3	**rs**. cyanide – cyanide	**rs**. death – death **rs**. cyanide – cyanide			
4	**rs**. cyanide – cyanide	**rs**. cyanide – cyanide	**rs**. reported – reported **rs**. cyanide – cyanide		
5			**rs**. reported – reported	**rs**. reported – reported **rs**. method – methods	
6	**rs**. cyanide – cyanide	**rs**. cyanide – cyanide		**psm**. analysis – measurements **rs**. cyanide – cyanide **rs**. method – method	**rs**. methods – method **rs**. using – using **rs**. GC – GC **rs**. NPD – NPD **rs**. derivatizations – derivatization
7			**rc**. reported – reports	**rc**. reported – reports **psm**. classical – conventional	**rs**. using – used **rc** reported – reports
8					**rs**. using – used
9	**rs**. cyanide – cyanide	**rs**. cyanide – cyanide	**rs**. cyanide – cyanide	**rs**. analysis – analysis **rs**. cyanide – cyanide	
10					**rs**. GC – GC
11				**rs**. analysis – analysis	
12				**pc**. analysis – determining (**analize**)	
13	**rs**. cyanide – cyanide	**rs**. cyanide – cyanide	**pc**. reported – paper (**report**) **rs**. cyanide – cyanide	**pc**. analysis – measuring (**measurement**) **rs**. cyanide – cyanide **psm**. method – technique **pc**. reported – paper (**report**)	**psm**. methods – technique **rs**. using – using **rs**. GC – GC **pc**. reported – paper (**report**)
14				**rs**. method – methods	**rs**. methods – methods

	6	7	8	9	10
7	**rs**. using – used				
8	**rs**. using – used **rs**. HS – HS	**rs**. columns – columns **rs**. give – giving **psm**. sensitivity – efficiency **rs**. used – used			
9	**psm**. measurements – analysis **rs**. cyanide – cyanide				
10	**rs**. GC – GC				
11	**psm**. measurements – analysis			**rs** analysis – analysis	**s**. microcomputer - controlled device – it **rs**. cooling – cooling **rs**. oven – oven
12	**pc**. measurements – determining (**measuring**)			**rs**. applied – applied **pc**. analysis – determining (**analize**) **rs**. blood – blood	**rs**. device – device
13	**rs**. GC – GC **rc**. measurements measuring **rs**. cyanide – cyanide **rs**. using – using **rs**. HS – HS	**psp**. reports – paper **rs**. columns – column **rs**. used – using	**rs**. mL – mL **rs**. HS – HS **rs**. vapor – vapor **psm**. injected – introduced **rs**. medium – medium **rs**. bore – bore **rs**. capillary – capillary **rs**. columns – column **rs**. used – using	**pc**. analysis measuring (**analize**) **rs**. cyanide – cyanide **rs**. whole – whole **rs**. blood – blood	**rs**. oven – oven **rs**. temperatures – temperature **rs**. GC – GC
14	**rs**. method – methods	**psm**. give – obtained **rs**. sensitivity – sensitivity **pc**. low – higher (**high**)	**psm**. efficiency – sensitivity		

	11	12	13
12	**pc**. analysis – determining (**analize**)		
13	**rs**. oven – oven **pc**. analysis – measuring (**analize**)	**psm**. determining – measuring **rs**. blood – blood	
14			**d**. oración 13 – this

1. 6. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11	12	13
2	1												
3	1	2											
4	1	1	2										
5	0	0	1	2									
6	1	1	0	3	5								
7	0	0	1	2	2	1							
8	0	0	0	0	1	2	4						
9	1	1	1	2	0	2	0	0					
10	0	0	0	0	1	1	0	0	0				
11	0	0	0	1	0	1	0	0	1	3			
12	0	0	0	1	0	1	0	0	3	1	1		
13	1	1	2	4	4	5	3	9	4	3	2	2	
14	0	0	0	1	1	1	3	1	0	0	0	0	1

1. 6. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,0) [**0**]
2. (0,0) [**0**]
3. (0,0) [**0**]
4. (0,2) [**2**]
5. (0,2) [**2**]
6. (2,1) [**3**]
7. (0,3) [**3**]
8. (1,1) [**2**]
9. (0,2) [**2**]
10. (0,2) [**2**]
11. (1,0) [**1**]
12. (1,0) [**1**]
13. (7,0) [**7**]
14. (1,-) [**1**]

1. 6. 4. Texto resultante tras eliminar las oraciones marginales.

4. For analysis of cyanide, the most classical is a colorimetric method with microdiffusion, fluorometric methods were also reported. **5**. Methods using gas chromatography (GC) with electron capture detection (ECD) and with nitrogen-phosphorus detection (NPD) and mass spectrometry (MS), after suitable derivatizations, were reported. **6**. GC measurements of cyanide with NPD without derivatization were usually made using the headspace (HS) method. **7**. In most of these reports, conventional packed columns, which give relatively low sensitivity and poor separation, were used. **8**. With wide-bore capillary columns, only a 0.5-mL volume of the HS vapor can be injected; with medium-bore capillary columns, split injection giving less than 5% of efficiency has to be used. **9**. Solid-phase microextraction has been applied to analysis of cyanide in human whole blood.

10. Recently, a microcomputer-controlled device for cooling oven temperatures below 0º C has become available for new types of GC instruments. **11**. It was originally designed for rapid cooling of the oven to reduce time for analysis. **12**. This new device has been applied for determining chloroform and methylene chloride in blood.

13. In this paper, we have established a new GC technique using cryogenic oven for measuring cyanide in whole blood without any complicated pre-treatment; as much as 5 mL of the HS vapor for cyanide can be introduced without any loss into a medium-bore capillary column by use of a low oven temperature. **14**. This means that 10-100 times higher sensitivity can be obtained by this method as compared with that of the previous methods.

1. 7. Texto 7: *RP-HPLC binding domains of proteins*.

1. Reversed-phase high-performance liquid chromatography (RP- HPLC) is now a central technique for the analysis and purification of biological molecules as a result of the high level of reproducibility, selectivity, and sensitivity that can be achieved. **2**. Due to its ability to monitor subtle changes in molecular conformation, RP-HPLC is also now emerging as a powerful technique for studying the role of lipid-like surfaces in several biorecognition phenomena, such as the action of antimicrobial peptides and the role of hydrophobicity in protein folding. **3**. However, further significant progress in the development of RP-HPLC is impeded by the lack of theoretical models which accurately describe the molecular details of peptide and protein interactions in RP-HPLC. **4**. The slow development of detailed physicochemical models is largely due to the complex structural equilibria that peptides, and particularly proteins, can undergo in RP-HPLC systems.

5. A full understanding of the chromatographic process requires detailed knowledge of the chemical and physical nature of both the mobile phase and the stationary phase and also information on the types of interactions which occur between the solute and the ligand or the solvent. **6**. While little is known about the detailed molecular structure of proteins at the chromatographic surface, experimental data with species variants of proteins, as well recombinant mutants, indicate that proteins interact with the chromatographic surface in an orientation-specific manner. **7**. The retention behavior of proteins, which can be described in terms of the affinity and kinetics of the interaction, is therefore determined by the molecular composition of a specific contact region. **8**. Although the contact region for small peptides may involve contributions from the total or a large proportion of the molecular surface of the solute, for larger polypeptides or proteins, retention data suggest that the contact region represents a relatively small portion of the total solute surface. **9**. The retention properties of larger polypeptides and proteins are therefore determined by the specific contact amino acid residues rather than by the entire amino acid sequence. **10**. However, the location and identity of these chromatographic contact regions of proteins cannot be readily established. **11**. Without this information, it is not possible to predict the molecular basis of the retention behavior of a protein, and this limitation constrains the further development of RP-HPLC as a technique to study protein- surface interactions.

12. To address this problem, procedures have been developed in this study to identify the chromatographic contact regions of proteins when adsorbed to reversed-phase sorbents. **13**. In particular, proteolytic techniques have been used to probe the surface region of horse heart cytochrome c (Cyt c) and bovine growth hormone (bGH) while adsorbed to an n-butyl (C-4) and n-octadecylsilica (C-18) reversed-phase sorbent. **14**. Following proteolytic digestion and characterization of the derived fragments, the results were correlated with the known three-dimensional structure of these two proteins and provide insight into the location of the possible contact regions as well as the orientation of these two proteins at the surface of reversed-phase sorbents.

1. 7. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. RP-HPLC – RP-HPLC **rs**. technique – technique **rc**. molecules – molecular				
3	**rs**. RP-HPLC – RP-HPLC **rc**. molecules – molecular	**rs**. molecular – molecular **rs**. RP-HPLC – RP-HPLC **rs**. peptides – peptide **rs**. protein – protein			
4	**rs**. RP-HPLC – RP-HPLC	**pc**. conformation – structural (**structure**) **rs**. RP-HPLC – RP-HPLC **rs**. peptides – peptides **rs**. protein – proteins	**rs**. development – development **rs**. RP-HPLC – RP-HPLC **rs**. models – models **rc**. details – detailed **rs**. peptide – peptides **rs**. protein – proteins		
5	**rc**. chromatography – chromatographic	**hip**. peptides/ protein – solute	**rc**. details – detailed **hip**. peptide/protein – solute **rs**. interactions – interactions	**rs**. detailed – detailed **psm**. physicochemical – chemical and physical **hip**. peptides/proteins – solute	
6	**rc**. chromatography – chromatographic **rc**. molecules – molecular	**rs**. molecular – molecular **psm**. conformation – structure **rs**. surfaces – surface **rs**. protein – proteins	**rs**. molecular – molecular **rc**. details – detailed **rs**. protein – proteins **rc**. interactions – interact	**rs**. detailed – detailed **rc**. structural – structure **rs**. proteins – proteins	**rs**. chromatographic– chromatographic **rs**. detailed – detailed **rc**. knowledge – known **rc**. interactions – interact **tr**. solute – proteins
7	**rc**. molecules – molecular	**rs**. molecular – molecular **psm**. conformation – composition **rs**. protein – proteins	**rs**. describe – described **rs**. molecular – molecular **rs**. protein – proteins **rs**. interactions – interaction	**pc**. structural – composition (**structure**) **rs**. proteins – proteins	**rs**. interactions – interaction **tr**. solute – proteins
8	**rc**. molecules – molecular	**rs**. molecular – molecular **rs**. surfaces – surface **rs**. peptides – peptides **rs**. protein – proteins	**rs**. molecular – molecular **rs**. peptide – peptides **rs**. protein – proteins	**rs**. peptides – peptides **rs**. proteins – proteins	**rs**. solute – solute

	1	2	3	4	5
9		**rc**. peptides – polypeptides **rs**. protein – proteins	**rc**. peptide – polypeptides **rs**. protein – proteins	**rc**. peptides – polypeptides **rs**. proteins – proteins	**tr**. solute – proteins
10	**rc**. chromatography – chromatographic	**rs**. protein – proteins	**rs**. protein – proteins	**rs**. proteins – proteins	**rs**. chromatographic– chromatographic **tr**. solute – proteins
11	**rs**. RP-HPLC – RP-HPLC **rs**. technique – technique **rc**. molecules – molecular	**rs**. molecular – molecular **rs**. RP-HPLC – RP-HPLC **rs**. technique – technique **rs**. studying – study **rs**. surfaces – surface **rs**. protein – protein	**rs**. development – development **rs**. RP-HPLC – RP-HPLC **psm**. impeded – constrains **rs**. molecular – molecular **rs**. protein – protein **rs**. interactions – interactions	**rs**. development – development **rs**. proteins – protein **rs**. RP-HPLC – RP-HPLC	**rs**. interactions – interactions **tr**. solute – protein
12	**rs**. reversed – reversed **rs**. phase – phase **rc**. chromatography – chromatographic	**rs**. protein – proteins	**rc**. development – developed **rs**. protein – proteins	**rc**. development – developed **rs**. proteins– proteins	**rs**. chromatographic– chromatographic **tr**. solute – proteins
13	**rs**. reversed – reversed **rs**. phase – phase	**rs**. surfaces – surface **tr**. protein – Cyt c /bGH	**tr**. protein – Cyt c /bGH	**tr**. proteins – Cyt c /bGH	
14	**rs**. reversed – reversed **rs**. phase – phase	**psm**. conformation – structure **rs**. surfaces – surface **rs**. protein – proteins	**rs**. protein – proteins	**rc**. structural – structure **rs**. proteins– proteins	**tr**. solute – proteins

	6	7	8	9	10
7	**rs**. molecular – molecular **psm**. structure – composition **rs**. proteins – proteins **rc**. interact – interaction **rs**. specific – specific				
8	**rs**. molecular – molecular **rs**. proteins – proteins **rs**. data – data **rs**. surface – surface	**rs**. retention – retention **rs**. proteins – proteins **rs**. molecular – molecular **rs**. contact – contact **rs**. region – region			
9	**rs**. proteins – proteins	**rs**. retention – retention **rs**. proteins – proteins **rs**. determined – determined **rs**. specific – specific **rs**. contact – contact	**rs**. larger – larger **rs**. polypeptides – polypeptides **rs**. proteins – proteins **rs**. retention – retention **rs**. contact – contact		
10	**rs**. proteins – proteins **rs**. chromatographic – chromatographic	**rs**. proteins – proteins **psm**. determined – established **rs**. contact – contact **rs**. region – regions	**rs**. proteins – proteins **rs**. contact – contact **rs**. region – regions	**rs**. proteins – proteins **psm**. determined – established **rs**. contact – contact	
11	**rs**. molecular – molecular **rs**. proteins – protein **rc**. interact – interactions **rs**. surface – surface	**rs**. retention – retention **rs**. behavior – behavior **rs**. proteins – protein **rs**. interaction – interactions **rs**. molecular – molecular	**rs**. molecular – molecular **rs**. surface – surface **rs**. proteins – protein **rs**. retention – retention	**rs**. retention – retention **rs**. proteins – protein	**d**. oración 10 – this **rs**. proteins – protein
12	**rs**. proteins – proteins **rs**. chromatographic – chromatographic	**rs**. proteins – proteins **psm**. determined – identify **rs**. contact – contact **rs**. region – regions	**rs**. proteins – proteins **rs**. contact – contact **rs**. region – regions	**rs**. proteins – proteins **psm**. determined – identify **rs**. contact – contact	**rs**. chromatographic – chromatographic **rs**. contact – contact **rs**. regions– regions **rs**. proteins – proteins **psm**. established – identify

	6	7	8	9	10
13	**tr**. proteins – Cyt c /bGH **rs**. surface – surface	**tr**. proteins – Cyt c /bGH **rs**. region – region	**rs**. surface – surface **tr**. proteins – Cyt c /bGH **rs**. region – region	**tr**. proteins – Cyt c /bGH	**rs**. regions – region **tr**. proteins – Cyt c /bGH
14	**rs**. known – known **rs**. structure – structure **rs**. proteins – proteins **rs**. surface – surface **rs**. orientation – orientation	**rs**. proteins – proteins **psm**. composition – structure **rs**. contact – contact **rs**. region – regions	**rs**. surface – surface **rs**. proteins – proteins **rs**. contact – contact **rs**. region – regions	**rs**. proteins – proteins **rs**. contact – contact	**rs**. location – location **rs**. contact – contact **rs**. regions – regions **rs**. proteins – proteins

	11	12	13
12	**d**. oración 11 – this **rs**. protein – proteins **rc**. development – developed **rc**. study – study		
13	**tr**. protein – Cyt c /bGH **rs**. surface – surface	**rs**. regions – region **rs**. adsorbed – adsorbed **rs**. reversed – reversed **rs**. phase – phase **rs**. sorbents – sorbent	
14	**rs**. protein – proteins **rs**. surface – surface	**rs**. contact – contact **rs**. regions – regions **rs**. proteins – proteins **rs**. reversed – reversed **rs**. phase – phase **rs**. sorbents – sorbents	**rs**. proteolytic – proteolytic **rs**. surface – surface **rs**. region – regions **rs**. reversed – reversed **rs**. phase – phase **rs**. sorbent – sorbents

1. 7. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11	12	13
2	3												
3	2	4											
4	1	4	6										
5	1	1	3	3									
6	2	4	4	3	5								
7	1	3	4	2	2	5							
8	1	4	3	2	1	4	5						
9	0	2	2	2	1	1	5	5					
10	1	1	1	1	2	2	4	3	3				
11	3	6	6	3	2	4	5	4	2	2			
12	3	1	2	2	2	2	4	3	3	5	4		
13	2	2	1	1	0	2	2	3	1	2	2	5	
14	2	3	1	2	1	5	4	4	2	4	2	6	6

1. 7. 3. Tabla representativa del número de conexiones entre oraciones

1. (-,0) [**0**]
2. (0,5)[**5**]
3. (1,4) [**5**]
4. (2,0)[**2**]
5. (0,1)[**1**]
6. (3,4) [**7**]
7. (2,6)[**8**]
8. (3,3) [**6**]
9. (2,0) [**2**]
10. (1,2) [**3**]
11. (5,1) [**6**]
12. (3,2) [**5**]
13. (1,1) [**2**]
14. (6,-) [**6**]

1. 7. 4. Texto resultante tras eliminar las oraciones marginales.

2. Due to its ability to monitor subtle changes in molecular conformation, RP-HPLC is also now emerging as a powerful technique for studying the role of lipid-like surfaces in several biorecognition phenomena, such as the action of antimicrobial peptides and the role of hydrophobicity in protein folding. **3**. However, further significant progress in the development of RP-HPLC is impeded by the lack of theoretical models which accurately describe the molecular details of peptide and protein interactions in RP-HPLC. **4**. The slow development of detailed physicochemical models is largely due to the complex structural equilibria that peptides, and particularly proteins, can undergo in RP-HPLC systems.

5. A full understanding of the chromatographic process requires detailed knowledge of the chemical and physical nature of both the mobile phase and the stationary phase and also information on the types of interactions which occur between the solute and the ligand or the solvent. **6**. While little is known about the detailed molecular structure of proteins at the chromatographic surface, experimental data with species variants of proteins, as well recombinant mutants, indicate that proteins interact with the chromatographic surface in an orientation-specific manner. **7**. The retention behavior of proteins, which can be described in terms of the affinity and kinetics of the interaction, is therefore determined by the molecular composition of a specific contact region. **8**. Although the contact region for small peptides may involve contributions from the total or a large proportion of the molecular surface of the solute, for larger polypeptides or proteins, retention data suggest that the contact region represents a relatively small portion of the total solute surface. **9**. The retention properties of larger polypeptides and proteins are therefore determined by the specific contact amino acid residues rather than by the entire amino acid sequence. **10**. However, the location and identity of these chromatographic contact regions of proteins cannot be readily established. **11**. Without this information, it is not possible to predict the molecular basis of the retention behavior of a protein, and this limitation constrains the further development of RP-HPLC as a technique to study protein-surface interactions.

12. To address this problem, procedures have been developed in this study to identify the chromatographic contact regions of proteins when adsorbed to reversed-phase sorbents. **13**. In particular, proteolytic techniques have been used to probe the surface region of horse heart cytochrome c (Cyt c) and bovine growth hormone (bGH) while adsorbed to an n-butyl (C-4) and n-octadecylsilica (C-18) reversed-phase sorbent. **14**. Following proteolytic digestion and characterization of the derived fragments, the results were correlated with the known three-dimensional structure of these two proteins and provide insight into the location of the possible contact regions as well as the orientation of these two proteins at the surface of reversed-phase sorbents.

1. 8. Texto 8: *Nanoliter chemistry combined with mass.*

1. At the early development stage of a disease such as cancer, only a small population of normal cells undergoes transformation and a change of the proteome is expected to occur in these tumor cells. **2**. In cell research, a number of cell lines derived from tumors in in vitro cell culture systems have been used as sources of large numbers of cells of a uniform type and they play an essential role in the process of investigating cell functions. **3**. However, because of the difference in the environment of cell growth in the intact organism and the culture, great care must be taken in extrapolating the results of in vitro experiments to the reality in vivo. **4**. This is particularly true for proteins, whose identity and abundance can vary greatly at different stages of cell development or expressing conditions. **5**. Thus, analyzing the primary cells isolated from a tissue, instead of a cultured cell line, is the only way to provide a direct correlation of the change in protein contents and identities with a biological event, such as the progression of a disease, without running into a risk of potential artifacts of cell culture. **6**. This requires very sensitive analytical methods, because the number of tumor or other disease cells available for investigation from a tissue is often limited.

7. At present, several tracer techniques involving radiolabeling, immunoassay, and fluorescence tagging have been used to provide information on the distribution of usually known proteins in a small number of cells or a single cell. **8**. Miniaturized detection schemes based on electrochemical, laser-induced fluorescence detection and, more recently, mass spectrometry have shown great promise in analyzing cellular components including peptides and proteins in single cells. **9**. However, unequivocal identification and characterization of trace amounts of unknown or modified proteins in very small volumes associated with tissues, single cells, subcellular compartments, and exocytosis still remain a formidable task. **10**. In this report, we describe an analytical approach that combines three rapidly developing techniques, namely, nanoliter or subnanoliter chemistry, matrix-assisted laser desorption/ ionization time-of-flight mass spectrometry (MALDI-TOF MS), and protein database searching, to characterize attomole quantities of proteins from small-volume samples including single cells.

1. 8. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. tumor – tumors **rs**. cells – cell				
3	**psm**. development – growth* **rs**. cells – cell	**rs**. cell – cell **rs**. in vitro – in vitro **rs**. culture – culture			
4	**rs**. development – development* **rs**. stage – stages* **pc**. change – vary (**change**) **rc**. proteome - proteins **rs**. cells – cell	**rs**. cell – cell	**d**. great care… in vivo – this **rs**. cell – cell **psm**. growth – development		
5	**psm**. development – progression **rs**. disease – disease **rs**. change – change **rc**. proteome - proteins **rs**. cells – cells	**rs**. lines – line **rs**. cell – cell **rs**. culture – culture	**rs**. cell – cells **rs**. culture – culture	**rs**. proteins – protein **rs**. identity – identities **pc**. vary – change (**change**) **rs**. cell – cells **psm**. development – progression*	
6	**rs**. disease – disease **rs**. tumor – tumor **rs**. cells – cells	**rs**. number – number **rs**. tumors – tumor **rs**. cells – cells **rc**. investigating – investigation	**rs**. cell – cells	**rs**. cell – cells	**d**. oración 5 – this **rc**. analyzing – analytical **rs**. cells – cells **rs**. tissue – tissue **rs**. disease – disease
7	**rc**. proteome - proteins **rs**. cells – cells	**rs**. used – used **a**. large – small **rs**. numbers – number **rs**. cells – cells	**rs**. cell – cell	**rs**. proteins – proteins **rs**. cell – cells	**rs**. cells – cells **rs**. provide – provide **rs**. protein – proteins
8	**rc**. proteome - proteins **rs**. cells – cells	**rs**. cells – cells	**rs**. cell – cells	**rs**. proteins – proteins **rs**. cell – cells	**rs**. analyzing – analyzing **rs**. cells – cells **rs**. protein – proteins
9	**rs**. cells – cells **pc**. change – modified (**modification**) **rc**. proteome - proteins	**rs**. cells – cells	**rs**. cell – cells	**rs**. proteins – proteins **psm**. vary – modified **rs**. cell – cells	**rs**. cells – cells **rs**. tissue – tissues **pc**. change – modified (**modification**) **rs**. protein – proteins
10	**rs**. cells – cells **rc**. proteome – proteins	**rs**. cells – cells	**rs**. cell – cells	**rs**. proteins – protein **rs**. cell – cells	**rc**. analyzing – analytical **rs**. cells – cells **rs**. protein – proteins

	6	7	8	9
7	**rs**. number – number **rs**. cells – cells			
8	**rc**. analytical – analyzing **rs**. cells – cells	**rs**. fluorescence – fluorescence **rs**. proteins – proteins **rs**. single – single **rs**. cell – cells		
9	**rs**. cells – cells **rs**. tissue – tissues	**rc**. known – unknown **rs**. proteins – proteins **rs**. single – single **rs**. cell – cells	**rs**. proteins – proteins **rs**. single – single **rs**. cells – cells	
10	**rs**. analytical – analytical **rs**. cells – cells	**rs**. techniques – techniques **rs**. proteins – protein **rs**. single – single **rs**. cell – cells	**rs**. mass – mass **rs**. spectrometry – spectrometry **rs**. including – including **rs**. proteins – protein **rs**. single – single **rs**. cells – cells	**rc**. characterization – characterize **psm**. amounts – quantities **rs**. proteins – proteins **rs**. small – small **rs**. volumes – volume **rs**. single – single **rs**. cells – cells

1. 8. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9
2	2								
3	1(2)	3							
4	3(5)	1	3						
5	5	3	2	4(5)					
6	3	4	1	1	5				
7	2	4	1	2	3	2			
8	2	1	1	2	3	2	4		
9	3	1	1	3	4	2	4	3	
10	2	1	1	2	3	2	4	6	7

1. 8. 3. Tabla representativa del número de conexiones entre oraciones

1. (-,1) (-,2)[**1**] [**2**]	**2**. (0,2) [**2**]	**3**. (0,0) (1,0)[**0**] [**1**]
4. (0,1) (1,1)[**1**] [**2**]	**5**. (2,2) [**4**]	**6**. (2,0) [**2**]
7. (1,3) [**4**]	**8**. (1,1) [**2**]	**9**. (2,1) [**3**]
10. (3,-) [**3**]		

1. 8. 4. Texto resultante tras eliminar las oraciones marginales.

1. At the early development stage of a disease such as cancer, only a small population of normal cells undergoes transformation and a change of the proteome is expected to occur in these tumor cells. **2**. In cell research, a number of cell lines derived from tumors in in vitro cell culture systems have been used as sources of large numbers of cells of a uniform type and they play an essential role in the process of investigating cell functions. [2]4. This [that great care must be taken in extrapolating the results of in vitro experiments to the reality in vivo, because of the difference in the environment of cell growth in the intact organism and the culture] is particularly true for proteins, whose identity and abundance can vary greatly at different stages of cell development or expressing conditions. 5. Thus, analyzing the primary cells isolated from a tissue, instead of a cultured cell line, is the only way to provide a direct correlation of the change in protein contents and identities with a biological event, such as the progression of a disease, without running into a risk of potential artifacts of cell culture. 6. This requires very sensitive analytical methods, because the number of tumor or other disease cells available for investigation from a tissue is often limited.

7. At present, several tracer techniques involving radiolabeling, immunoassay, and fluorescence tagging have been used to provide information on the distribution of usually known proteins in a small number of cells or a single cell. **8**. Miniaturized detection schemes based on electrochemical, laser-induced fluorescence detection and, more recently, mass spectrometry have shown great promise in analyzing cellular components including peptides and proteins in single cells. **9**. However, unequivocal identification and characterization of trace amounts of unknown or modified proteins in very small volumes associated with tissues, single cells, subcellular compartments, and exocytosis still remain a formidable task. **10**. In this report, we describe an analytical approach that combines three rapidly developing techniques, namely, nanoliter or subnanoliter chemistry, matrix-assisted laser desorption/ ionization time-of-flight mass spectrometry (MALDI-TOF MS), and protein database searching, to characterize attomole quantities of proteins from small-volume samples including single cells.

1. 9. Texto 9: *The determination of food colours by HPLC with on-line dialysis for sample preparation*.

1. Synthetic colours, mainly azo dyes, have been used in a wide range of food products for many years. **2**. The sensory perception of colour is an important quality

[2] La oración 3, que establece una conexión mediante un enlace dudoso, puede eliminarse, ya que su información está contenida en la 4, mediante la utilización de *this*. Presenta la misma coherencia que el texto original.

attribute and many processed products have been coloured either to replace natural colours destroyed during processing or to provide colour in goods which would otherwise be colourless, as, for example, soft drinks. **3**. The current trend is, however, away from the use of such synthetic dyes despite the extensive toxicological screening which they have undergone. **4**. The lists of permitted synthetic dyes are progressively being reduced and a number of food processors are relying on the use of natural colours to impart the desired colour to their products. **5**. Unfortunately, many of the natural colours (e.g. anthocyanins, carotenoids and betalaines) do not have the same stability under processing conditions as their synthetic counterparts. **6**. There will always, therefore, be a tendency (or at least a temptation) for some food processors to include synthetic dyes in their products without the correct label designation.

7. There is, therefore, a well-defined need for precise and accurate methods for the determination of synthetic dyes in foods, particularly for the following reasons:

(i) to determine whether there are synthetic dyes present in foods and if so, whether they are correctly permitted;

(ii) to determine the levels of such dyes;

(iii) to confirm the absence of added dyes in foods where they are not declared;

(iv) to check on the stability of dyes during processing and storage (Damant et al.., 1989).

8. There are well-documented methods for the chromatographic separation of synthetic dyes (Saag, 1988). **9**. These are either based on ion-exchange methods or now more commonly on ion-pair chromatography under reversed phase conditions. **10**. A detailed study of the factors affecting retention under these conditions has recently been published (Damant, 1990). **11**. The simplest mobile phase conditions are those based on ammonium acetate buffers. **12**. The problem in methods for the quantitative determination of synthetic dyes in foods does not, therefore, lie in their separation, but rather in the means for their quantitative isolation from the food matrix. **13**. Traditional methods, such as adsorption on to wool or polyamide powder (Lehmann, 1970) tend not to be quantitative and can lead to dye degradation. **14**. A milder means of extraction, either from the food itself (e.g. soft drinks) or from an aqueous extract of the food, would offer considerable advantages and this is the situation encountered with dialysis. **15**. This technique has been used as a means of sample preparation for vitamin analysis by HPLC (Nicholson *et al..* 1984). **16**. However, only recently has a fully automated system been made commercially available, which allows considerable flexibility in terms of dialysis conditions, coupled with automated injection of the sample into the HPLC column (Green *et al.,* 1989). **17**. The power of the technique is further extended by allowing enrichment of the determinand in the dialysate on small trace enrichment cartridge prior to elution to the analytical HPLC column. **18**. The combination of dialysis and trace enrichment then leads to a complete sample preparation systems for microconstituents of foods, which is marketed under the acronym ASTED (automated sample treatment through enrichment of dialysates).

1. 9. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**a**. synthetic – natural **rs**. colours – colours **e**. food - 0 **rs**. products – products				
3	**rs**. synthetic – synthetic **rs**. dyes – dyes **rc**. used – use	**a**. natural – synthetic **psm**. colours – dyes			
4	**rs**. synthetic – synthetic **rs**. colours – colours **rs**. dyes – dyes **rc**. used – use **rs**. food – food **rs**. products – products	**rc**. processed – processors **rs**. natural – natural **rs** colours – colours **psm**. provide – impart **rs**. products – products	**rs**. use – use **rs**. synthetic – synthetic **rs**. dyes – dyes		
5	**rs**. synthetic – synthetic **rs**. colours – colours	**rs**. natural – natural **rs** colours – colours **rs**. processing – processing	**rs**. synthetic – synthetic **psm**. dyes – colours	**rs**. synthetic – synthetic **rc**. processors – processing **rs**. natural – natural **rs** colours – colours	
6	**rs**. synthetic – synthetic **rs**. dyes – dyes **rs**. food – food **rs**. products – products	**rc**. processed – processors **a**. natural – synthetic **psm**. colours – dyes **rs**. products – products	**psm**. trend – tendency **rs**. synthetic – synthetic **rs**. dyes – dyes	**rs**. synthetic – synthetic **rs**. dyes – dyes **rs**. food – food **rs**. processors – processors **rs**. products – products	**psm**. colours – dyes **rc**. processing – processors **rs**. synthetic – synthetic
7	**rs**. synthetic – synthetic **rs**. dyes – dyes **rs**. food – foods	**a**. natural – synthetic **psm**. colours – dyes **rs**. processing – processing **hip**. products – foods	**rs**. synthetic – synthetic **rs**. dyes – dyes	**rs**. permitted – permitted **rs**. synthetic – synthetic **rs**. dyes – dyes **rs**. food – foods **rc**. processors – processing	**psm**. colours – dyes **rs**. stability – stability **rs**. processing – processing **rs**. synthetic – synthetic
8	**rs**. synthetic – synthetic **rs**. dyes – dyes	**a**. natural – synthetic **psm**. colours – dyes	**rs**. synthetic – synthetic **rs**. dyes – dyes	**rs**. synthetic – synthetic **rs**. dyes – dyes	**psm**. colours – dyes **rs**. synthetic – synthetic
9					

	1	2	3	4	5
10					
11					
12	**rs**. synthetic – synthetic **rs**. dyes – dyes **rs**. food – foods	**hip**. products – foods **a**. natural – synthetic **psm**. colours – dyes	**rs**. synthetic – synthetic **rs**. dyes – dyes	**rs**. synthetic – synthetic **rs**. dyes – dyes **rs**. food – foods	**psm**. colours – dyes **rs**. synthetic – synthetic
13	**rs**. dyes – dye	**psm**. colours – dye	**rs**. dyes – dye	**rs**. dyes – dye	**psm**. colours – dye
14	**rs**. food – food	**hip**. products – food **rs**. soft – soft **rs**. drinks – drinks		**rs**. food – food	
15					
16					
17	**hip**. synthetic dyes – determinand		**hip**. synthetic dyes – determinand	**hip**. synthetic dyes – determinand	**hip**. synthetic – determinand
18	**hip**. synthetic dyes - microconstituents **rs**. food – foods	**hip**. products – foods	**hip**. synthetic dyes - microconstituents	**hip**. synthetic dyes – microconstituents **rs**. food – foods	**hip**. synthetic – microconstituents

	6	7	8	9	10
7	**rs**. food – foods **rc**. processors – processing **rs**. synthetic – synthetic **rs**. dyes – dyes				
8	**rs**. synthetic – synthetic **rs**. dyes – dyes	**rs**. methods – methods **rs**. synthetic – synthetic **rs**. dyes – dyes			
9		**rs**. methods – methods	**rs**. methods – methods **rc**. chromatographic – chromatography		
10				**rs**. conditions – conditions	
11				**rs**. based – based **rs**. phase – phase **rs**. conditions – conditions	**rs**. conditions – conditions
12	**rs**. food – foods **rs**. synthetic – synthetic **rs**. dyes – dyes	**rs**. methods – methods **rs**. determination – determination **rs**. synthetic – synthetic **rs**. dyes – dyes **rs**. foods – foods	**rs**. methods – methods **rs**. separation – separation **rs**. synthetic – synthetic **rs**. dyes – dyes	**rs**. methods – methods	
13	**rs**. dyes – dye	**rs**. methods – methods **rs**. dyes – dye	**rs**. methods – methods **rs**. dyes – dye	**rs**. methods – methods	
14	**rs**. food – food	**rs**. food – food			
15					
16					
17	**hip**. synthetic dyes – determinand	**hip**. synthetic dyes – determinand	**hip**. synthetic dyes – determinand		
18	**hip**. synthetic dyes – microconstituents **rs**. food – foods	**psp**. methods – treatment **hip**. synthetic dyes – microconstituents **rs**. foods – foods	**hip**. synthetic dyes - microconstituents		

	11	12	13	14	15	16	17
12							
13		**rs**. methods – methods **rs**. quantitative – quantitative **rs**. dyes – dye					
14		**rs**. foods – food **psp**. isolation – extraction **rs**. means – means					
15				**rs**. means – means **hip**. dialysis – technique			
16				**psp**. means – system **hip**. food – sample **rs**. dialysis – dialysis	**hip**. technique – dialysis **rs**. sample – sample **rs**. HPLC – HPLC		
17		**hip**. synthetic dyes – determin.	**hip**. synthetic dyes – determin.		**rc**. analysis – analytical **rs**. HPLC – HPLC	**psm**. system - technique **rs**. HPLC – HPLC **rs**. column – column	
18		**hip**. synthetic dyes – microconst. **rs**. foods – foods **psp**. means – systems	**hip**. synthetic dyes – microcon.	**psp**. methods – means **rs**. food – foods **rs**. dialysis – dialysis	**hip**. technique – dialysis **rs**. sample – sample **rs**. preparation – preparation	**rs**. system – systems* **rs**. dialysis – dialysis **rs**. automated – automated **rs**. sample – sample	**tr**. determinand – microconst. **rs**. dialysate – dialysates **rs**. trace – trace **rs**. enrichment – enrichment

1. 9. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	4													
3	3	2												
4	6	5	3											
5	2	3	2	4										
6	4	4	3	5	3									
7	3	4	2	5	4	4								
8	2	2	2	2	2	2	3							
9	0	0	0	0	0	0	1	2						
10	0	0	0	0	0	0	0	0	1					
11	0	0	0	0	0	0	0	0	3	1				
12	3	3	2	3	2	3	5	4	1	0	0			
13	1	1	1	1	1	1	2	2	1	0	0	3		
14	1	3	0	1	0	1	1	0	0	0	0	3	0	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	2
16	0	0	0	0	0	0	0	0	0	0	0	0	0	3
17	1	0	1	1	1	1	1	1	0	0	0	1	1	0
18	2	1	1	2	1	2	3	1	0	0	0	3	1	3

	15	16	17
16	3		
17	2	3	
18	3	3(4)	4

1. 9. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,6) [6]	**2**. (1,6) [7]	**3**. (1,2) [3]
4. (3,4) [7]	**5**. (2,2) [4]	**6**. (5,2) [7]
7. (5,3) [8]	**8**. (1,1) [2]	**9**. (0,1) [1]
10. (0,0) [0]	**11**. (1,0) [1]	**12**. (6,3) [9]
13. (1,0) [1]	**14**. (2,2) [4]	**15**. (0,2) [2]
16. (2,2) [4]	**17**. (1,1) [2]	**18**. (6-) [6]

1. 9. 4. Texto resultante tras eliminar las oraciones marginales.

1. Synthetic colours, mainly azo dyes, have been used in a wide range of food products for many years. **2**. The sensory perception of colour is an important quality attribute and many processed products have been coloured either to replace natural colours destroyed during processing or to provide colour in goods which would otherwise be colourless, as, for example, soft drinks. **3**. The current trend is, however, away from the use of such synthetic dyes despite the extensive toxicological screening which they have undergone. **4**. The lists of permitted synthetic dyes are progressively being reduced and a number of food processors are relying on the use of natural colours to impart the desired colour to their products. **5**. Unfortunately, many of the natural colours (e.g. anthocyanins, carotenoids and betalaines) do not have the same stability under processing conditions as their synthetic counterparts. **6**. There will always, therefore, be a tendency (or at least a temptation) for some food processors to include synthetic dyes in their products without the correct label designation.

7. There is, therefore, a well-defined need for precise and accurate methods for the determination of synthetic dyes in foods, particularly for the following reasons:

(i) to determine whether there are synthetic dyes present in foods and if so, whether they are correctly permitted;
(ii) to determine the levels of such dyes;
(iii) to confirm the absence of added dyes in foods where they are not declared;
(iv) to check on the stability of dyes during processing and storage (Damant et al.., 1989).

8. There are well-documented methods for the chromatographic separation of synthetic dyes (Saag, 1988). **9**. These are either based on ion-exchange methods or now more commonly on ion-pair chromatography under reversed phase conditions. **11**. The simplest mobile phase conditions are those based on ammonium acetate buffers. **12**. The problem in methods for the quantitative determination of synthetic dyes in foods does not, therefore, lie in their separation, but rather in the means for their quantitative isolation from the food matrix. **13**. Traditional methods, such as adsorption on to wool or polyamide powder (Lehmann, 1970) tend not to be quantitative and can lead to dye degradation. **14**. A milder means of extraction, either from the food itself (e.g. soft drinks) or from an aqueous extract of the food, would offer considerable advantages and this is the situation encountered with dialysis. **15**. This technique has been used as a means of sample preparation for vitamin analysis by HPLC (Nicholson *et al.*. 1984). **16**. However, only recently has a fully automated system been made commercially available, which allows considerable flexibility in terms of dialysis conditions, coupled with automated injection of the sample into the HPLC column (Green *et al.,* 1989). **17**. The power of the technique is further extended by allowing enrichment of the determinand in the dialysate on small trace enrichment cartridge prior to elution to the analytical HPLC column. **18**. The combination of dialysis and trace enrichment then leads to a complete sample preparation systems for microconstituents of foods, which is marketed under the acronym ASTED (automated sample treatment through enrichment of dialysates).

1. 10. Texto 10: *Analysis of serotonin in whole-blood samples – A novel fully automated method.*

1. For many years, serotonin (5-hydroxytryptamine) has been known as a pharmacological substance. **2**. As early as 1948, Rapport, (1) described the structure of the compound. **3**. Today, serotonin is known generally as a neurotransmitter and neuroregulating compound. **4**. Serotonin participates in the regulation of important functions, including, circadian rhythm, temperature regulation, aggression control, and sexual function. **5**. Researchers have observed changes in serotonin metabolism accompanying psychiatric diseases, including forms of depression. **6**. In cases of migraine attacks, the concentration of serotonin in plasma with high platelet concentrations can increase as much as three times. **7**. Furthermore, a correlation exists between the severity of the attack and the serotonin level.

8. The analysis of serotonin in whole blood is interesting because the compound is deposited in thrombocytes, which resemble some nerve cells. **9**. Disturbances in the central nervous system, where serotonin acts, can in some cases be measured indirectly by monitoring the serotonin metabolism in blood. **10**. Using thrombocytes as a model system, we can examine the influence of psychotropic agents. **11**. The normal level of serotonin in blood varies from 70 to 160 ng/mL (10).

12. The current method for measuring serotonin in whole blood or in platelet-enriched plasma requires three steps: adding perchloric acid to the sample, centrifuging it, and injecting some of the supernatant into a high performance liquid chromatography (HPLC) system. **13**. If we were able to perform an equally reliable, but less tedious and time- consuming, solid-phase extraction (SPE) method, it would be a step forward. **14**. Common off-line SPE does not seem to be the proper choice for analysing serotonin in whole blood. **15**. In the past, analysts have reported that SPE cartridges become clogged with whole blood samples, which caused disturbed flow patterns and provided irreproducible results.

16. On-line, high-pressure SPE is better suited to viscous and complex matrices such as whole blood. **17**. In this article, we will describe a method that uses on-line, high pressure SPE for the automated analysis of serotonin in whole-blood samples.

1. 10. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5	6
2	**hip**. serotonin – compound					
3	**rs**. serotonin – serotonin **rs**. known – known	**rs**. compound – compound				
4	**rs**. serotonin – serotonin	**hip**. compound – serotonin	**rs**. serotonin – serotonin **rc**. neuroregulating – regulation			
5	**rs**. serotonin – serotonin	**hip**. compound – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin		
6	**rs**. serotonin – serotonin	**hip**. compound – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	
7	**rs**. serotonin – serotonin	**hip**. compound – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. attacks – attack **psm**. concentration – level **rs**. serotonin – serotonin
8	**rs**. serotonin – serotonin	**rs**. compound – compound	**rs**. serotonin – serotonin **rs**. compound – compound	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin
9	**rs**. serotonin – serotonin	**hip**. compound – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin **rs**. metabolism – metabolism	**rs**. serotonin – serotonin
10						
11	**rs**. serotonin – serotonin	**hip**. compound – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**pc**. changes – varies* (**variation**) **rs**. serotonin – serotonin	**psm**. concentration – level **rs**. serotonin – serotonin
12	**rs**. serotonin – serotonin	**hip**. compound – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin **rs**. plasma – plasma **rs**. platelet – platelet
13						

	1	2	3	4	5	6
14	**rs**. serotonin – serotonin	**hip**. compound – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin
15						
16						
17	**rs**. serotonin – serotonin	**hip**. compound – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin

	7	8	9	10	11
8	**rs**. serotonin – serotonin **e**. level – 0				
9	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin **rs**. blood – blood **rc**. nerve – nervous			
10		**pc**. analysis – examine (**analyse**) **rs**. thrombocytes – thrombocytes			
11	**rs**. serotonin – serotonin **rs**. level – level	**rs**. serotonin – serotonin **rs**. blood – blood	**rs**. serotonin – serotonin **rs**. blood – blood		
12	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin **rs**. whole – whole **rs**. blood – blood	**rs**. serotonin – serotonin **rs**. measured – measuring **rs**. blood – blood		**rs**. serotonin – serotonin **rs**. blood – blood
13				**rs**. we – we+	
14	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin **rs**. whole – whole **rs**. blood – blood	**rs**. serotonin – serotonin **rs**. blood – blood		**rs**. serotonin – serotonin **rs**. blood – blood
15		**rc**. analysis – analysts rs. whole – whole **rs**. blood – blood	**rs**. blood – blood		**rs**. blood – blood
16		**rs**. whole – whole **rs**. blood – blood	**rs**. blood – blood		**rs**. blood – blood
17	**rs**. serotonin – serotonin	**rs**. serotonin – serotonin **rs**. whole – whole **rs**. blood – blood	**rs**. serotonin – serotonin **rs**. blood – blood	**rs**. using – uses* **rs**. we – we+	**rs**. serotonin – serotonin **rs**. blood – blood

	12	13	14	15	16
13	**rs**. method – method				
14	**rs**. serotonin – serotonin **rs**. whole – whole **rs**. blood – blood	**rs**. SPE – SPE **e**. method – 0			
15	**rs**. whole – whole **rs**. blood – blood **rs**. sample – samples	**rs**. SPE – SPE	**rs**. SPE – SPE **rc**. analysing – analysts **rs**. whole – whole **rs**. blood – blood		
16	**rs**. whole – whole **rs**. blood – blood	**rs**. SPE – SPE	**a**. off-line – on-line **rs**. SPE – SPE **rs**. whole – whole **rs**. blood – blood	**rs**. SPE – SPE **rs**. whole – whole **rs**. blood – blood	
17	**rs**. method – method **rs**. serotonin – serotonin **rs**. whole – whole **rs**. blood – blood **rs**. sample – samples	**rs**. we – we+ **rs**. SPE – SPE **rs**. method – method	**a**. off-line – on-line **rs**. SPE – SPE **rc**. analysing – analysis **rs**. serotonin – serotonin **rs**. whole – whole **rs**. blood – blood	**rc**. analysts – analysis **psm**. reported – describe **rs**. SPE – SPE **rs**. whole – whole **rs**. blood – blood **rs**. samples – samples	**rs**. on-line – on-line **rs**. high – high **rs**. pressure – pressure **rs**. SPE – SPE **rs**. whole – whole **rs**. blood – blood

1. 10. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11
2	1										
3	2	1									
4	1	1	2								
5	1	1	1	1							
6	1	1	1	1	1						
7	1	1	1	1	1	3					
8	1	1	2	1	1	1	2				
9	1	1	1	1	2	1	1	3			
10	0	0	0	0	0	0	0	2	0		
11	1	1	1	1	1(2)	2	2	2	2	0	
12	1	1	1	1	1	3	1	3	3	0	2
13	0	0	0	0	0	0	0	0	0	0(1)	0
14	1	1	1	1	1	1	1	3	2	0	2
15	0	0	0	0	0	0	0	3	1	0	1
16	0	0	0	0	0	0	0	2	1	0	1
17	1	1	1	1	1	1	1	3	2	0(2)	2

	12	13	14	15	16
13	1				
14	3	2			
15	3	1	4		
16	2	1	4	3	
17	5	2(3)	6	6	6

1. 10. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,0) [**0**]	**2**. (0,0) [**0**]	**3**. (0,0) [**0**]
4. (0,0) [**0**]	**5**. (0,0) [**0**]	**6**. (0,2) [**2**]
7. (1,0) [**1**]	**8**. (0,5) [**5**]	**9**. (1,1) [**2**]
10. (0,0) [**0**]	**11**. (0,0) [**0**]	**12**. (3,3) [**6**]
13. (0,0) (0,1) [**0**] [**1**]	**14**. (2,3) [**5**]	**15**. (3,2) [**5**]
16. (2,1) [**3**]	**17**. (5,-) (6,-) [**5**] [**6**]	

1. 10. 4. Texto resultante tras eliminar las oraciones marginales.

6. In cases of migraine attacks, the concentration of serotonin in plasma with high platelet concentrations can increase as much as three times. **7**. Furthermore, a correlation exists between the severity of the attack and the serotonin level.

8. The analysis of serotonin in whole blood is interesting because the compound is deposited in thrombocytes, which resemble some nerve cells. **9**. Disturbances in the central nervous system, where serotonin acts, can in some cases be measured indirectly by monitoring the serotonin metabolism in blood.

12. The current method for measuring serotonin in whole blood or in platelet-enriched plasma requires three steps: adding perchloric acid to the sample, centrifuging it, and injecting some of the supernatant into a high performance liquid chromatography (HPLC) system.[3] **14**. Common off-line SPE does not seem to be the proper choice for analysing serotonin in whole blood. **15**. In the past, analysts have reported that SPE cartridges become clogged with whole blood samples, which caused disturbed flow patterns and provided irreproducible results.

16. On-line, high-pressure SPE is better suited to viscous and complex matrices such as whole blood. **17**. In this article, we will describe a method that uses on-line, high pressure SPE for the automated analysis of serotonin in whole-blood samples.

[3] La oración 13 establece una conexión mediante un enlace dodoso. Como puede observarse puede eliminarse sin que la coherencia del texto original se vea afectada.

2. TEXTOS PERTENECIENTES A LOS ARTÍCULOS ‘ACADÉMICOS INFORMALES.

2. 1. Texto 1: *Is it Real Gold*?

1. On March 12, 1997, Ann Landers advised a writer to believe her boyfriend, who claimed the necklace he had given her for Christmas was “real gold”, despite the fact that it kept turning her neck green. **2**. She went on to say that, “Some people have an element in their system that does this.” **3**. What should a chemist make of this exchange?

4. First of all, what is "real" gold? **5**. To a chemist, "real" gold might imply "pure" gold. **6**. The gift necklace was surely not “pure” in a chemical sense, because 100%, or 24 carat gold (also spelled "karat", and always marked as "K") is too soft to be practical for use in jewelry. **7**. Jewelry is usually made of 18 or 14 carat gold, whose weight fraction of gold is 18/24 or 14/24, respectively. **8**. The "carat" system was invented by the British in about the year 1300 to facilitate the use of gold in commerce. **9**. In the United States, the lowest allowed carat designation for gold is 10, but a 1/2-carat error is allowed, so that "10K" can be marketed that is only 9.5K, or 39.6% by weight gold. **10**. In Britain, items that are only 9K can be sold, but there is no margin for error on the low side; France's lowest carat designation is 18K. **11**. The rest of the material in the alloy can be a variety of other metals; those most often used are copper, nickel, or silver. **12**. The composition of the alloy is not disclosed in the "carat" marking, and different alloying metals are used to make different colors. **13**. For example, notice the three colors of gold in the 19th-century English verge pocket watch illustrated in Figure 1.

14. The metals used to make different colors are usually:

Yellow: Au, Cu, Ag, Zn

White: Au, Cu, Ni, Zn

Red: Au, Cu

Green: Au, Ag

15. The alloy called “green gold” (which is only slightly greenish) is rarely used, so the boyfriend of Ann Landers’ correspondent was most likely claiming that the gift necklace was one of the recognized alloys whose minimum gold content has been designated in Britain by Hallmarks and there and elsewhere by the carat system.

16. The common phrase "acid text" comes from the practice of testing gold alloys with nitric acid. **17**. An alloy of less than about 9 or 10 carat is quickly turned green. **18**. Compositions up to 18 carat gold alloy can be tested with aqua regia (a mixture of nitric and hydrochloric acid, in roughly equal proportions); the small spot subjected to the acid will immediately become pale yellow, as the base metals that provide some of the color are dissolved. **19**. Instead of risking damage to the piece of yewelry, tests were often done using a "touchstone", a hard, black, slightly abrasive stone on which the object was rubbed fairly firmly, wiping a small amount of metal onto the stone surface. **20**. The tests were done on the stone and the jewelry could easily be repolished to its original condition. **21**. It is interesting that so many of the words involved in this testing process have survived to the present time: "Hallmark", "acid test", and "touchstone".

22. A perceptive chemist will recognize that the carat marking specifies the minimum weight percentage of gold (only), but neither the identity nor the concentration of the other parts of the alloy. **23**. This means that an 18 carat gold item could have from zero to 25 weight percent copper, which corresponds to zero to 51 mole percent copper. **24**. Mixtures involving nickel and zinc result in about the same mole fraction of the base metals because of the similarity of their average atomic masses to that of copper.

25. The question of whether it is possible to oxidize a metal, and therefore to produce the possibility of a colored salt, is largely reflected in the standard potential. **26**. For the principal elements of the gold alloys, the pertinent numbers are:

$Au^{3+} + 3é \rightarrow Au$ $E^0 = 1.42$ V

$Ag^{+} + é \rightarrow Ag$ $E^0 = 0.80$ V

$Cu^{2+} + 2é \rightarrow Cu$ $E^0 = 0.34$ V

$Ni^{2+} + 2é \rightarrow Ni$ $E^0 = 0.23$ V

$Zn^{2+}\ 2é \rightarrow Zn$ $E^0 = 0.76$ V

27. These data suggest why gold is a "noble" metal: the potential required to oxidize it is near the maximum available in aqueous solutions. **28**. Consider, for example, combining the half-cells

$Au(s) = Au^{3+} + 3é$ $E^0 = -1.42$ V

or

$Cu(s) = Cu^{2+} + 2é$ $E^0 = -0.34$ V

with the half-cell for a good oxidizer, such as:

$NO_3^- + 4H_3O^+ + 3$ é $= NO + 6H_2O$ $E^0 = 0.96$ V

29. It is obvious that nitric acid will not oxidize gold but will easily oxidize copper. **30**. However, the prediction of the conditions under which a metal might be oxidized depends upon more than just the potential for producing the "bare" (or hydrated) metal ion. **31**. One must also consider that the metal ion may be stabilized in solution by formation of a complex ion, which is the reason why both the nitric acid oxidant and the hydrochloric acid complexing agent are required when aqua regia (literally, royal water – a phrase coined by alchemists to designate a solvent for "noble" metals) dissolves gold. **32**. When gold is dissolved in aqua regia, the reaction is:

$Au(s) + 4Cl^- + NO_3^- + 4H_3O^+ = AuCl_4^- + NO(g) + 6H_2O$

33. Since the potential for

$AuCl_4^- + 3é \rightarrow Au + 4\ Cl^-$

is 1.00 vol, the dissolution of gold in aqua regia becomes thermodynamically favorable. **34**. Oxidation by ordinary air (or air contaminated by sulfides) can tarnish silver, copper, and nickel, but pure gold is impervious to attack, even by concentrated nitric or hydrochloric acid acting independently. **35**. The chloride ion in a person's perspiration can facilitate the oxidation of the base metals in a gold jewelry alloy. **36**. But another factor impacting on whether these metals are leached out of necklaces, earrings, or dental work is the fact that mixtures of gold, silver, and copper with other metals are less reactive than one would predict if their alloys were ideal solutions. **37**. Greenwood and Earnshaw say that these materials "can be thought of as nonstoichiometric intermetallic compounds of definite structural types...."

38. When people experience an allergic reaction to "real gold" jewelry, it is almost always one of the base metals that is the culprit, and nickel is by far the most notorious in this respect. **39**. It seems that some people develop an amazingly acute sensitivity to this metal, and this most often occurs after ears are pierced and gold-plated earrings are inserted. **40**. Since the gold plating is usually quite thin and it is often applied on top of a layer of nickel plating, it is not too surprising that the wearer is often exposed to significant amounts of nickel as the gold wears, cracks, and is scratched. **41**. What is surprising is that the body "learns" to react to these ions only after it has been sensitized by previous exposure. **42**. The precise mechanism of this sensitization is not well understood.

43. Consider the original question, "was the necklace gold, or not". **44**. If it were "real" 14K or 18K, it is unlikely that a person who does not sweat aqua regia would develop a green neck. **45**. It is much more likely that the boyfriend had passed off a gold-plated necklace as more expensive jewelry. **46**. If some misrepresentation occurred in this case, Georgius Agricola reminds us that it was not the fault of the element: "if by means of gold and silver and gems men can overcome the chastity of women, corrupt the honour of many people, bribe the course of justice and commit innumerable wickednesses, it is not the metals which are to be blamed, but the evil passions of men which become inflamed and ignited"

2. 1. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**s**. Ana Landers – she **d**. turning her neck green – this				
3	**d**. turning her neck green – this	**rs**. this – this			
4	**rs**. real – real **rs**. gold – gold				
5	**rs**. real – real **rs**. gold – gold		**rs**. chemist – chemist	**rs**. real – real **rs**. gold – gold	
6	**rs**. necklace – necklace **rs**. gold – gold		**rc**. chemist – chemical	**rs**. gold – gold	**rc**. chemist – chemical **rs**. pure – pure **rs**. gold – gold
7	**hip**. necklace – jewelry **rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
8	**rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
9	**rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
10	**hip**. necklace – items			**rs**. gold – gold	
11	**hip**. necklace – alloy **tr**. gold – metals			**tr**. gold – metals	**tr**. gold – metals
12	**hip**. necklace – alloy **tr**. gold – metals **hip**. green – colors			**tr**. gold – metals	**tr**. gold – metals
13	**rs**. gold – gold **hip**. green – colors			**rs**. gold – gold	**rs**. gold – gold
14	**rs**. Au – AU **rs**. green – green			**psm**. gold – Au	**psm**. gold – Au
15	**rs**. Ann Landers – Ann Landers **rs**. boyfriend – boyfriend **rs**. claimed – claiming **rs**. necklace – necklace **rs**. gold – gold **rs**. green – green			**rs**. gold – gold	**rs**. gold – gold

	1	2	3	4	5
16	**hip**. necklace – alloy **rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
17	**hip**. necklace – alloy **rs**. turning – turned **rs**. green – green				
18	**hip**. necklace – alloy **rs**. gold – gold **hip**. green – color			**rs**. gold – gold	**rs**. gold – gold
19	**hip**. necklace – piece of jewelry **tr**. gold – metal			**tr**. gold – metal	**rs**. gold – gold
20	**hip**. necklace – jewelry				
21					
22	**hip**. necklace – alloy **rs**. gold – gold		**rs**. chemist – chemist	**rs**. gold – gold	**rs**. chemist – chemist **rs**. gold – gold
23	**hip**. necklace – item **rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
24	**hip**. necklace – mixtures **tr**. gold – metals			**tr**. gold – metals	**tr**. gold – metals
25	**hip**. gold – metal **tr**. green – colored			**hip**. gold – metal	**hip**. gold – metal
26	**hip**. necklace – alloys **rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
27	**rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
28	**psm**. gold – Au			**psm**. gold – Au	**psm**. gold – Au
29	**rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
30	**hip**. gold – metal			**hip**. gold – metal	**hip**. gold – metal
31	**rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
32	**rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold

	1	2	3	4	5
33	**rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
34	**rs**. gold – gold			**rs**. gold – gold	**rs**. pure – pure **rs**. gold – gold
35	**hip**. Ann Landers – person **hip**. necklace – jewelry **rs**. gold – gold	**psp**. people – person		**rs**. gold – gold	**rs**. gold – gold
36	**rs**. necklace – necklaces **rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
37					
38	**hip**. Ann Landers – people **hip**. necklace – jewelry **rs**. real – real **rs**. gold – gold	**rs**. people – people		**rs**. real – real **rs**. gold – gold	**rs**. real – real **rs**. gold – gold
39	**hip**. Ann Landers – people **rs**. gold – gold	**rs**. people – people		**rs**. gold – gold	**rs**. gold – gold
40	**hip**. Ann Landers – wearer **rs**. gold – gold	**tr**. people – wearer		**rs**. gold – gold	**rs**. gold – gold
41		**psp**. system – body			
42					
43	**rs**. necklace – necklace **rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
44	**hip**. Ann Landers – person **s**. necklace – it **rs**. real – real **e**. gold – 0 **rs**. green – green **rs**. neck – neck	**psp**. people – person		**rs**. real – real **e**. gold – 0	**rs**. real – real **e**. gold – 0
45	**rs**. boyfriend – boyfriend **rs**. necklace – necklace **rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold
46	**rs**. gold – gold			**rs**. gold – gold	**rs**. gold – gold

	6	7	8	9	10
7	**rs**. carat – carat **rs**. gold – gold **rs**. jewelry – jewelry				
8	**rs**. carat – carat **rs**. use – use **rs**. gold – gold	**rs**. carat – carat **rs**. gold – gold			
9	**rs**. carat – carat **rs**. gold – gold **rs**. K – K	**rs**. carat – carat **rs**. weight – weight **rs**. gold – gold	**rs**. carat – carat **rs**. gold – gold		
10	**hip**. necklace – items **rs**. carat – carat **rs**. K – K	**tr**. jewelry – items **rs**. 18 – 18 **rs**. carat – carat	**rs**. carat – carat **rc**. British – Britain	**rs**. lowest – lowest **rs**. carat – carat **rs**. designation – designation **rs**. error – error **rs**. K – K **psm**. marketed – sold	
11	**hip**. necklace – alloy **tr**. gold – metals **rc**. use – used	**tr**. jewelry – items **tr**. gold – metals	**rc**. use – used **tr**. gold – metals	**tr**. gold – metals	**tr**. items – alloy
12	**hip**. necklace – alloy **rs**. carat – carat **tr**. gold – metals **rs**. marked – marking **rc**. use – used	**tr**. jewelry – alloy **rs**. made – make **rs**. carat – carat **tr**. gold – metals	**rs**. carat – carat **rc**. use – used **tr**. gold – metals	**rs**. carat – carat **tr**. gold – metals	**tr**. items – alloy **rs**. carat – carat
13	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	
14	**psm**. gold – Au **rc**. use – used	**rs**. made – make **psm**. gold – Au	**rc**. use – used **psm**. gold – Au	**psm**. gold – Au	
15	**rs**. gift – gift **rs**. necklace – necklace **rs**. carat – carat **rs**. gold – gold **rc**. use – used	**tr**. jewelry – necklace **rs**. carat – carat **rs**. gold – gold	**rs**. carat – carat **rs**. system – system **rc**. British – Britain **rc**. use – used **rs**. gold – gold	**psm**. lowest – minimum **rs**. carat – carat **rc**. designation – designated **rs**. gold – gold	**rs**. Britain – Britain **tr**. items – necklace **psm**. lowest – minimum **rs**. carat – carat **rc**. designation – designated
16	**hip**. necklace – alloys **rs**. gold – gold	**tr**. jewelry – alloys **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**tr**. items – alloys

	6	7	8	9	10
17	**hip**. necklace – alloy **rs**. carat – carat	**tr**. jewelry – alloy **rs**. carat – carat	**rs**. carat – carat	**rs**. carat – carat	**tr**. items – alloy **rs**. 9 – 9 **rs**. carat – carat
18	**hip**. necklace – compositiuons **rs**. carat – carat **rs**. gold – gold **tr**. jewelry – alloy	**tr**. jewelry – alloy **rs**. 18 – 18 **rs**. carat – carat **rs**. gold – gold	**rs**. carat – carat **rs**. gold – gold	**rs**. carat – carat **rs**. gold – gold	**tr**. items – alloy **rs**. carat – carat **rs**. 18 – 18
19	**hip**. necklace – object **tr**. gold – metal **rs**. jewelry – jewelry	**rs**. jewelry – jewelry **tr**. gold – metal	**tr**. gold – metal	**tr**. gold – metal	**tr**. items – piece of jewelry
20	**rs**. jewelry – jewelry	**rs**. jewelry – jewelry			**tr**. items – jewelry
21					
22	**hip**. necklace – alloy **rc**. chemical – chemist **rs**. carat – carat **rs**. gold – gold **rc**. marked – marking	**tr**. jewelry – alloy **rs**. carat – carat **rs**. weight – weight **psm**. fraction – percentage **rs**. gold – gold	**rs**. carat – carat **rs**. gold – gold	**psm**. lowest – minimum **rs**. carat – carat **pc**. designation – specifies (**specification**) **rs**. weight – weight **rs**. gold – gold	**tr**. items – alloy **psm**. lowest – minimum **rs**. carat – carat **pc**. designation – specifies (**specification**)
23	**hip**. necklace – item **rs**. carat – carat **rs**. gold – gold	**tr**. jewelry – item **rs**. 18 – 18 **rs**. carat – carat **rs**. weight – weight **pc**. fraction – percent (**percentage**) **rs**. gold – gold	**rs**. carat – carat **rs**. gold – gold	**rs**. carat – carat **rs**. weight – weight **rs**. gold – gold	**rs**. items – item **rs**. carat – carat **rs**. 18 – 18
24	**hip**. necklace – mixtures **tr**. gold – metals	**tr**. jewelry – mixtures **rs**. fraction – fraction **tr**. gold – metals	**tr**. gold – metals	**tr**. gold – metals	**tr**. items – mixtures
25	**hip**. gold – metal	**hip**. gold – metal	**hip**. gold – metal	**hip**. gold – metal	
26	**hip**. necklace – alloys **rs**. gold – gold	**tr**. jewelry – alloys **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**tr**. items – alloys
27	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	
28	**psm**. gold – Au	**psm**. gold – Au	**psm**. gold – Au	**psm**. gold – Au	

	6	7	8	9	10
29	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	
30	**hip**. gold – metal	**hip**. gold – metal	**hip**. gold – metal	**hip**. gold – metal	
31	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	
32	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	
33	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	
34	**rs**. pure – pure **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	
35	**hip**. necklace – alloy **rs**. gold – gold **rs**. jewelry – jewelry	**rs**. jewelry – jewelry **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**tr**. items – alloy
36	**rs**. necklace – necklaces **rs**. gold – gold **tr**. jewelry – alloys	**tr**. jewelry – necklaces **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**tr**. items – necklaces
37					
38	**rs**. gold – gold **rs**. jewelry – jewelry	**rs**. jewelry – jewelry **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**tr**. items – jewelry
39	**tr**. jewelry – earrings **rs**. gold – gold	**tr**. jewelry – earrings **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	
40	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	
41					
42					
43	**rs**. necklace – necklace **rs**. gold – gold	**tr**. jewelry – neclace **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**tr**. items – necklace
44	**s**. necklace – it **rs**. K – K	**rs**. 18 – 18 **rs**. 14 – 14 **psm**. carat – K		**rs**. K – K	**rs**. 18 – 18 **rs**. K – K
45	**rs**. necklace – necklace **rs**. gold – gold **rs**. jewelry – jewelry	**rs**. jewelry – jewelry **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**tr**. items – necklace
46	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	

	11	12	13	14	15
12	**rs**. alloy – alloy **rs**. metals – metals **rs**. used – used				
13	**tr**. metals – gold	**tr**. metals – gold **rs**. colors – colors			
14	**rs**. metals – metals **rs**. used – used **psm**. copper – Cu **psm**. nickel – Ni **psm**. silver – Ag	**rs**. metals – metals **rs**. used – used **rs**. make – make **rs**. different – different **rs**. colors – colors	**rs**. colors – colors **psm**. gold – Au		
15	**rs**. alloy – alloy **tr**. metals – gold **rs**. used – used	**rs**. alloy – alloy **rs**. carat – carat **tr**. metals – gold **rs**. used – used **tr**. colors – green	**tr**. colors – green **rs**. gold – gold	**rs**. used – used **rs**. green – green **psm**. Au – gold	
16	**tr**. metals – gold **rs**. alloy – alloys	**rs**. alloy – alloys **tr**. metals – gold	**rs**. gold – gold	**psm**. Au – gold	**rs**. alloy – alloys **rs**. gold – gold
17	**rs**. alloy – alloy	**rs**. alloy – alloy **rs**. carat – carat **tr**. colors – green	**tr**. colors – green	**rs**. green – green	**rs**. alloy – alloy **rs**. green – green **rs**. carat – carat
18	**rs**. alloy – alloy **rs**. metals – metals	**rs**. alloy – alloy **rs**. carat – carat **rs**. metals – metals **rs**. colors – color	**rs**. colors – color **rs**. gold – gold	**rs**. metals – metals **rs**. colors – color **psm**. Au – gold	**rs**. alloy – alloy **hip**. green – color **hip**. necklace – compositions **rs**. gold – gold **rs**. carat – carat
19	**tr**. alloy – piece of jewelry **rs**. metals – metal	**tr**. alloy – piece of jewelry **rs**. metals – metal	**tr**. gold – metal	**rs**. metals – metal	**tr**. alloy – object **hip**. necklace – piece of jewelry **tr**. gold – metal
20	**tr**. alloy – jewelry	**tr**. alloy – jewelry			**hip**. necklace – jewelry
21					**rs**. Hallmarks – Hallmark
22	**rs**. alloy – alloy **tr**. metals – gold	**rs**. alloy – alloy **rs**. carat – carat **rs**. marking – marking **tr**. metals – gold	**rs**. gold – gold	**psm**. Au – gold	**rs**. alloy – alloy **rs**. minimum – minimum **rs**. gold – gold **psm**. designated – specifies **rs**. carat – carat

	11	12	13	14	15
23	**tr**. alloy – item **tr**. metals – gold **rs**. copper – copper	**tr**. alloy – item **rs**. carat – carat **tr**. metals – gold	**rs**. gold – gold	**psm**. Au – gold **psm**. Cu – copper	**hip**. necklace – item **rs**. gold – gold **rs**. carat – carat
24	**tr**. alloy – mixtures **rs**. metals – metals **rs**. copper – copper **rs**. nickel – nickel	**tr**. alloy – mixtures **rs**. metals – metals	**tr**. gold – metals	**rs**. metals – metals **psm**. Cu – copper **psm**. Zn – zinc **psm**. Ni – nickel	**hip**. necklace – mixtures **tr**. gold – metals
25	**rs**. metals – metal	**rs**. metals – metal **rc**. colors – colored	**rc**. colors – colored **hip**. gold – metal	**rs**. metals – metal **rc**. colors – colored	**tr**. green – colored **hip**. gold – metal
26	**rs**. alloy – alloys **tr**. metals – gold **psm**. copper – Cu **psm**. nickel – Ni **psm**. silver – Ag	**rs**. alloy – alloys **tr**. metals – gold	**rs**. gold – gold	**hip**. metals – elements **rs**. Au – Au **rs**. Cu – Cu **rs**. Ag – Ag **rs**. Zn – Zn **rs**. Ni – Ni	**rs**. alloy – alloys **rs**. gold – gold
27	**rs**. metals – metal	**rs**. metals – metal	**psm**. gold – Au	**rs**. metals – metal **psm**. Au – gold	**rs**. gold – gold
28	**psm**. copper – Cu	**tr**. metals – Au	**psm**. gold – Au	**rs**. Au – Au **rs**. Cu – Cu	**psm**. gold – Au
29	**tr**. metals – gold **rs**. copper – copper	**tr**. metals – gold	**rs**. gold – gold	**psm**. Au – gold **psm**. Cu – copper	**rs**. gold – gold
30	**rs**. metals – metal	**rs**. metals – metal	**hip**. gold – metal	**rs**. metals – metal	**hip**. gold – metal
31	**rs**. metals – metal	**rs**. metals – metal	**rs**. gold – gold	**rs**. metals – metals **psm**. Au – gold	**rs**. gold – gold
32	**tr**. metals – gold	**tr**. metals – gold	**rs**. gold – gold	**psm**. Au – gold	**rs**. gold – gold
33	**tr**. metals – gold	**tr**. metals – gold	**rs**. gold – gold	**psm**. Au – gold	**rs**. gold – gold
34	**tr**. metals – gold **rs**. copper – copper **rs**. nickel – nickel **rs**. silver – silver	**tr**. metals – gold	**rs**. gold – gold	**psm**. Au – gold **psm**. Cu – copper **psm**. Ag – silver **psm**. Ni – nickel	**rs**. gold – gold
35	**rs**. metals – metals **rs**. alloy – alloy	**rs**. alloy – alloy **rs**. metals – metals	**rs**. gold – gold	**rs**. metals – metals **psm**. Au – gold	**rs**. alloy – alloy **hip**. necklace – jewelry **rs**. alloy – alloy
36	**rs**. alloy – alloys **rs**. metals – metals **rs**. copper – copper **rs**. silver – silver	**rs**. alloy – alloys **rs**. metals – metals	**rs**. gold – gold	**rs**. metals – metals **psm**. Au – gold **psm**. Cu – copper **psm**. Ag – silver	**rs**. alloy – alloys **rs**. necklace – necklaces **rs**. gold – gold

	11	12	13	14	15
37					
38	**tr**. alloy – jewelry **rs**. metals – metals **rs**. nickel – nickel	**tr**. alloy – jewelry **rs**. metals – metals	**rs**. gold – gold	**rs**. metals – metals **psm**. Au – gold **psm**. Ni – nickel	**hip**. Ann Landers – people **hip**. necklace – jewelry **rs**. gold – gold
39	**rs**. metals – metal	**rs**. metals – metal	**rs**. gold – gold	**rs**. metals – metal **psm**. Au – gold	**hip**. Ann Landers – people **rs**. gold – gold
40	**tr**. metals – gold **rs**. nickel – nickel	**tr**. metals – gold	**rs**. gold – gold	**psm**. Au – gold **psm**. Ni – nickel	**hip**. Ann Landers – wearer **rs**. gold – gold
41					
42					
43	**tr**. alloy – necklace **tr**. metals – gold	**tr**. alloy – necklace **tr**. metals – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. necklace – necklace **rs**. gold – gold
44			**tr**. colors – green	**rs**. green – green	**rs**. green – green **hip**. Ann Landers – person
45	**tr**. alloy – necklace **tr**. metals – gold	**tr**. alloy – necklace **tr**. metals – gold	**rs**. gold – gold	**rs**. gold – gold	**tr**. alloy – jewelry **rs**. boyfriend – boyfriend **rs**. necklace – necklace **rs**. gold – gold
46	**rs**. metals – metals **rs**. silver – silver	**rs**. metals – metals	**rs**. gold – gold	**rs**. metals – metals **psm**. Au – gold **psm**. Ag – silver	**rs**. gold – gold

	16	17	18	19	20
17	**rs**. alloys – alloy				
18	**rs**. testing – tested **rs**. gold – gold **rs**. alloys – alloy **rs**. nitric – nitric **rs**. acid – acid	**rs**. alloy – alloy **rs**. carat – carat **hip**. green – color			
19	**rc**. testing – tests **tr**. gold – metal **tr**. alloys – piece of jewelry	**tr**. alloy – piece of jewelry	**tr**. compositions – piece of jewelry **tr**. alloy – object **rc**. tested – tests **rs**. metals – metal		
20	**rc**. testing – tests **tr**. alloys –jewelry	**tr**. alloy –jewelry	**tr**. compositions – jewelry **rc**. tested – tests	**rs**. jewelry – jewelry **rs**. tests – tests **rs**. done – done **rs**. stone – stone	
21	**rs**. acid – acid **rs**. test – test **rs**. testing – testing		**rc**. tested – testing **rs**. acid – acid	**rc**. tests – testing **rs**. touchstone – touchstone	**rc**. tests – testing
22	**rs**. gold – gold **rs**. alloys – alloy	**rs**. alloy – alloy **rs**. carat – carat	**rs**. carat – carat **rs**. gold – gold **rs**. alloys– alloy	**tr**. piece of jewelry – alloy **tr**. metal – gold	**tr**. jewelry – alloy
23	**rs**. gold – gold **tr**. alloys – item	**tr**. alloy – item **rs**. carat – carat	**tr**. compositions – item **rs**. 18 – 18 **rs**. carat – carat **rs**. gold – gold **tr**. metals – copper	**tr**. piece of jewelry – item **tr**. metal – gold	**tr**. jewelry – item
24	**tr**. gold – metals **tr**. alloys – mixtures	**tr**. alloy – mixtures	**tr**. alloy – mixtures **rs**. base – base **rs**. metals – metals	**tr**. piece of jewelry – mixtures **rs**. metal – metals	**tr**. jewelry – mixtures
25	**hip**. gold – metal	**tr**. green – colored	**rs**. metals – metal **rc**. color – colored	**rs**. metal – metal	
26	**rs**. gold – gold **rs**. alloys – alloys	**rs**. alloy – alloys	**rs**. gold – gold **rs**. alloy – alloys	**tr**. piece of jewelry – alloys **tr**. metal – gold	**tr**. jewelry – alloys
27	**rs**. gold – gold		**rs**. gold – gold **rs**. metals – metal	**rs**. metal – metal	
28	**psm**. gold – Au		**psm**. gold – Au	**tr**. metal – Au	
29	**rs**. gold – gold **rs**. nitric – nitric **rs**. acid – acid		**rs**. gold – gold **rs**. nitric – nitric **rs**. acid – acid **tr**. metals – copper	**tr**. metal – gold	

	16	17	18	19	20
30	**hip**. gold – metal		**rs**. metals – metal	**rs**. metal – metal	
31	**rs**. gold – gold **rs**. nitric – nitric **rs**. acid – acid		**rs**. gold – gold **rs**. aqua – aqua **rs**. regia – regia **rs**. nitric – nitric **rs**. hydrochloric – hydrochloric **rs**. acid – acid **rs**. metals – metals **rs**. dissolved – dissolves	**rs**. metal – metal	
32	**rs**. gold – gold		**rs**. gold – gold **rs**. aqua – aqua **rs**. regia – regia **rs**. dissolved – dissolved	**tr**. metal – gold	
33	**rs**. gold – gold		**rs**. gold – gold **rs**. aqua – aqua **rs**. regia – regia	**tr**. metal – gold	
34	**rs**. gold – gold **rs**. nitric – nitric **rs**. acid – acid		**rs**. gold – gold **rs**. nitric – nitric **rs**. hydrochloric – hydrochloric **rs**. acid – acid **tr**. metals – copper	**tr**. metal – gold	
35	**rs**. gold – gold **rs**. alloys – alloy	**rs**. alloy – alloy	**tr**. compositions – jewelry **rs**. gold – gold **rs**. alloy – alloy **rs**. base – base **rs**. metals – metals	**rs**. jewelry – jewelry **tr**. object – alloy **rs**. metal – metals	**rs**. jewelry – jewelry
36	**rs**. gold – gold **rs**. alloys – alloys	**rs**. alloy – alloys	**tr**. compositions – necklaces **rs**. gold – gold **rs**. alloy – alloys **rs**. metals – metals	**tr**. piece of jewelry – necklaces **tr**. object – alloys **rs**. metal – metals	**tr**. jewelry – necklaces
37					
38	**rs**. gold – gold **tr**. alloys – jewelry	**tr**. alloys – jewelry	**rs**. gold – gold **tr**. alloy – jewelry **rs**. base – base **rs**. metals – metals	**rs**. jewelry – jewelry **rs**. metal – metals	**rs**. jewelry – jewelry
39	**rs**. gold – gold		**rs**. gold – gold **rs**. metals – metal	**tr**. jewelry – earrings **rs**. metal – metal	**tr**. jewelry – earrings

	16	17	18	19	20
40	**rs**. gold – gold		**rs**. gold – gold	**tr**. metal – gold	
41					
42					
43	**rs**. gold – gold **tr**. alloys – necklace	**tr**. alloy – necklace	**tr**. compositions – necklace **rs**. gold – gold	**tr**. piece of jewelry – necklace **tr**. metal – gold	**tr**. jewelry – necklace
44		**psm**. carat – K **rs**. green – green	**rs**. 18 – 18 **psm**. carat – K **rs**. aqua – aqua **rs**. regia – regia **tr**. color – green		
45	**rs**. gold – gold **tr**. alloys – necklace	**tr**. alloy – necklace	**tr**. compositions – necklace **rs**. gold – gold **tr**. alloy – jewelry	**rs**. jewelry – jewelry **tr**. object – necklace **tr**. metal – gold	**rs**. jewelry – jewelry
46	**rs**. gold – gold		**rs**. gold – gold	**rs**. metal – metals	

	21	22	23	24	25
22					
23		**d**. oración 22 – this **rs**. carat – carat **rs**. weight – weight **rc**. percentage – percent **rs**. gold – gold **tr**. alloy – item			
24		**psm**. percentage – fraction **tr**. gold – metals **tr**. alloy – mixtures	**tr**. gold – metals **tr**. item – mixtures **rs**. copper – copper **rs**. mole – mole **pc**. percent – fraction (**percentage**)		
25		**hip**. gold – metal	**hip**. gold – metal	**rs**. metals – metal	
26		**rs**. gold – gold **rs**. alloy – alloys	**rs**. gold – gold **tr**. item – alloys **psm**. copper – Cu	**tr**. mixtures – alloys **tr**. metals – gold **psm**. copper – Cu	**tr**. metal – gold
27		**rs**. gold – gold	**rs**. gold – gold	**rs**. metals – metal	**rs**. oxidize – oxidize **rs**. metal – metal **rs**. potential – potential
28		**psm**. gold – Au	**psm**. gold – Au **psm**. copper – Cu	**tr**. metals – Au **psm**. copper – Cu	**rc**. oxidize – oxidizer **tr**. metal – Au
29		**rs**. gold – gold	**rs**. gold – gold **rs**. copper – copper	**tr**. metals – gold **rs**. copper – copper	**rs**. oxidize – oxidize **tr**. metal – gold
30		**hip**. gold – metal	**hip**. gold – metal	**rs**. metals – metal	**rs**. oxidize – oxidized **rs**. metal – metal **rs**. produce – producing **rs**. potntial – potential
31	**rs**. acid – acid	**rs**. gold – gold	**rs**. gold – gold **tr**. copper – metals	**rs**. metals – metal	**rc**. oxidize – oxidant **rs**. metal – metal
32		**rs**. gold – gold	**rs**. gold – gold	**tr**. metals – gold	**tr**. metal – gold
33		**rs**. gold – gold	**rs**. gold – gold	**tr**. metals – gold	**tr**. metal – gold **rs**. potential – potential
34	**rs**. acid – acid	**rs**. gold – gold	**rs**. gold – gold **rs**. copper – copper	**rs**. nickel – nickel **tr**. metals – gold **rs**. copper – copper	**rc**. oxidize – oxidation **tr**. metal – gold

	21	22	23	24	25
35		**rs**. gold – gold **rs**. alloy – alloy	**rs**. gold – gold **tr**. item – alloy **tr**. copper – metals	**tr**. mixtures – alloy **rs**. base – base **rs**. metals – metals	**rc**. oxidize – oxidation **rs**. metal – metals
36		**rs**. gold – gold **rs**. alloy – alloys	**rs**. gold – gold **tr**. item – necklaces **rs**. copper – copper	**rs**. mixtures – mixtures **rs**. metals – metals **rs**. copper – copper	**rs**. metal – metals
37					
38		**rs**. gold – gold **tr**. alloy – jewelry	**rs**. gold – gold **tr**. item – jewelry **tr**. copper – metals	**tr**. mixtures – jewelry **rs**. nickel – nickel **rs**. base – base **rs**. metals – metals	**rs**. metal – metals
39		**rs**. gold – gold	**rs**. gold – gold **tr**. copper – metal	**rs**. metals – metal	**rs**. metal – metal
40		**rs**. gold – gold	**rs**. gold – gold	**rs**. nickel – nickel **tr**. metals – gold	**tr**. metal – gold
41					
42					
43		**rs**. gold – gold **tr**. alloy – necklace	**rs**. gold – gold **tr**. item – necklace	**tr**. mixtures – necklace **tr**. metals – gold	**tr**. metal – gold
44					**tr**. colored – green
45		**rs**. gold – gold **tr**. alloy – necklace	**rs**. gold – gold **tr**. item – necklace	**tr**. mixtures – necklace **tr**. metals – gold	**tr**. metal – gold
46		**rs**. gold – gold	**rs**. gold – gold **hip**. copper – metals	**rs**. metals – metals	**rs**. metal – metals

	26	27	28	29	30
27	**d**. oración 26 – these **rs**. gold – gold **tr**. elements – metal				
28	**rs**. Au – Au **rs**. E^0 = 1.42 – E^0 = -1.42 **rs**. Cu – Cu **rs**. E^0 = 0.34 – E^0 = -0.34	**psm**. gold – Au **tr**. metal – Cu **rc**. oxidize – oxidizer			
29	**rs**. gold – gold **psm**. Cu – copper	**rs**. gold – gold **tr**. metal – copper **rs**. oxidize – oxidize	**psm**. Au – gold **psm**. Cu – copper **rc**. oxidizer – oxidize		
30	**hip**. gold – metal	**rs**. metal – metal **rs**. potential – potential **rs**. oxidize – oxidized	**hip**. Au – metal **rc**. oxidizer – oxidized	**rs**. oxidize – oxidized **hip**. gold – metal	
31	**tr**. elements – metals **rs**. gold – gold	**rs**. gold – gold **rs**. noble – noble **rs**. metal – metals **rs**. reqired – required **rc**. oxidize – oxidant **rs**. solutions – solution	**psm**. Au – gold **tr**. Cu – metals **rc**. oxidizer – oxidant	**rs**. nitric – nitric **rs**. acid – acid **rc**. oxidize – oxidant **rs**. gold – gold **tr**. copper – metals	**rs**. metal – metal **rc**. oxidized – oxidant **rs**. ion – ion
32	**rs**. gold – gold	**rs**. gold – gold	**rs**. Au – Au	**rs**. gold – gold	**tr**. metal – gold
33	**rs**. gold – gold	**rs**. gold – gold **rs**. potential – potential **psm**. solutions – dissolution	**rs**. Au – Au	**rs**. gold – gold	**tr**. metal – gold **rs**. potential – potential
34	**rs**. gold – gold **psm**. Ag – silver **psm**. Cu – copper **psm**. Ni – nickel	**rs**. gold – gold **tr**. metal – copper **rc**. oxidize – oxidation	**psm**. Au – gold **psm**. Cu – copper **rc**. oxidizer – oxidation	**rs**. nitric – nitric **rs**. acid – acid **rc**. oxidize – oxidation **rs**. gold – gold **rs**. copper – copper	**tr**. metal – gold **rc**. oxidized – oxidation
35	**tr**. elements – metals **rs**. gold – gold **rs**. alloys – alloy	**rs**. gold – gold **rs**. metal – metals **rc**. oxidize – oxidation	**psm**. Au – gold **tr**. Cu – metals **rc**. oxidizer – oxidation	**rc**. oxidize – oxidation **rs**. gold – gold **hip**. copper – metals	**rs**. metal – metals **rc**. oxidized – oxidation

	26	27	28	29	30
36	**tr**. elements – metals **rs**. gold – gold **rs**. alloys – alloys **psm**. Ag – silver **psm**. Cu – copper	**rs**. gold – gold **rs**. metal – metals **rs**. solutions – solutions	**psm**. Au – gold **psm**. Cu – copper	**rs**. gold – gold **rs**. copper – copper	**rc**. prediction – predict **rs**. metal – metals
37					
38	**tr**. elements – metals **rs**. gold – gold **tr**. alloys – jewelry **psm**. Ni – nickel	**rs**. gold – gold **rs**. metal – metals	**psm**. Au – gold **hip**. Cu – metals	**rs**. gold – gold **hip**. copper – metals	**rs**. metal – metals
39	**tr**. elements – metal **rs**. gold – gold	**rs**. gold – gold **rs**. metal – metal	**psm**. Au – gold **tr**. Cu – metal	**rs**. gold – gold **tr**. copper – metal	**rs**. metal – metal
40	**rs**. gold – gold **psm**. Ni – nickel	**rs**. gold – gold	**psm**. Au – gold	**rs**. gold – gold	**tr**. metal – gold
41					**rs**. ion – ions
42					
43	**rs**. gold – gold **tr**. alloys – necklace	**rs**. gold – gold	**psm**. Au – gold	**rs**. gold – gold	**tr**. metal – gold
44					
45	**rs**. gold – gold **tr**. alloys – necklace	**rs**. gold – gold	**psm**. Au – gold	**rs**. gold – gold	**tr**. metal – gold
46	**rs**. gold – gold **tr**. elements – metals	**rs**. gold – gold **rs**. metal – metals	**psm**. Au – gold **hip**. Cu – metals	**rs**. gold – gold **hip**. copper – metals	**rs**. metal – metals

	31	32	33	34	35
32	**rs**. aqua – aqua **rs**. regia – regia **rs**. dissoves – dissolved **rs**. gold – gold				
33	**rc**. solution – dissolution **rs**. aqua – aqua **rs**. regia – regia **rs**. gold – gold	**rs**. gold – gold **rc**. dissolved – dissolution **rs**. aqua – aqua **rs**. regia – regia			
34	**rs**. nitric – nitric **rc**. oxidant – oxidation **rs**. hydrochloric – hydrochloric **rs**. acid – acid **tr**. metals – copper **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold		
35	**rs**. ion – ion **rc**. oxidant – oxidation **rs**. metals – metals **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. oxidation – oxidation **hip**. copper – metals **rs**. gold – gold	
36	**rs**. one – one+ **rs**. solution – solutions **rs**. metals – metals **rs**. gold – gold	**rs**. gold – gold **tr**. dissolved – solutions **rc**. reaction – reactive	**rs**. gold – gold **psm**. dissolution – solutions	**rs**. silver – silver **rs**. copper – copper **rs**. gold – gold	**rs**. metals – metals **rs**. gold – gold **tr**. jewelry – necklaces **rs**. alloy - alloys
37					
38	**rs**. metals – metals **rs**. gold – gold	**rc**. reaction – reaction **rs**. gold – gold	**rs**. gold – gold	**hip**. copper – metals **rs**. nickel – nickel **rs**. gold – gold	**psp**. person – people **rs**. base – base **rs**. metals – metals **rs**. gold – gold **rs**. jewelry – jewelry
39	**rs**. metal – metal **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**hip**. nickel – metal **rs**. gold – gold	**psp**. person – people **rs**. metals – metal **rs**. gold – gold **tr**. jewelry – earrings
40	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. nickel – nickel **rs**. gold – gold	**tr**. person – wearer **tr**. metals – nickel **rs**. gold – gold

	31	32	33	34	35
41	**rs**. ion – ions	**rc**. reaction - react			
42					
43	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold **tr**. alloy – necklace
44	**rs**. aqua – aqua **rs**. regia – regia	**rs**. aqua – aqua **rs**. regia – regia	**rs**. aqua – aqua **rs**. regia – regia		**rs**. person – person
45	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold **rs**. jewelry – jewelry **tr**. alloy – necklace
46	**rs**. metals – metals **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold	**rs**. silver – silver **tr**. copper – metals **rs**. gold – gold	**rs**. metals – metals **rs**. gold – gold

	36	37	38	39	40
37	**d**. alloys – these				
38	**hip**. necklaces – jewelry **rs**. gold – gold **rs**. metals – metals **rc**. reactive – reaction				
39	**rs**. earrings – earrings **rs**. gold – gold **rs**. metals – metal		**rs**. people – people **rs**. gold – gold **tr**. jewelry – earrings **rs**. metals – metal		
40	**rs**. gold – gold **tr**. metals – nickel		**tr**. people – wearer **rs**. gold – gold **rs**. nickel – nickel	**tr**. people – wearer **hip**. metal – nickel **rs**. gold – gold **rc**. planted – planting	
41	**rc**. reactive – react		**rc**. reaction – react	**rc**. sensitivity – sensitized	**rs**. surprising – surprising **rc**. exposed – exposure
42				**rc**. sensitivity – sensitization	
43	**rs**. necklaces – necklace **rs**. gold – gold		**tr**. jewelry – necklace **rs**. gold – gold	**rs**. gold – gold	**rs**. gold – gold
44			**psp**. people – person	**psp**. people – person **rs**. develop – develop	**tr**. wearer – person
45	**rs**. necklaces – necklace **rs**. gold – gold **tr**. alloys – jewelry		**rs**. gold – gold **rs**. jewelry – jewelry	**rs**. gold – gold **rs**. planted – planted **hip**. earrings - jewelry	**rs**. gold – gold **rc**. planting – planted
46	**rs**. metals – metals **rs**. gold – gold **rs**. silver – silver		**rs**. gold – gold **rs**. metals – metals	**rs**. gold – gold **rs**. metal – metals	**rs**. gold – gold **tr**. nickel – metals

	41	42	43	44	45
42	**rs**. sensitized – sensitization				
43					
44			**s**. necklace – it		
45			**rs**. necklace – necklace **rs**. gold – gold	**rc**. unlikely – likely	
46			**rs**. gold – gold		**rs**. gold – gold

2. 1. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11
2	2										
3	1	1									
4	2	0	0								
5	2	0	1	2							
6	2	0	1	1	3						
7	2	0	0	1	1	3					
8	1	0	0	1	1	3	2				
9	1	0	0	1	1	3	3	2			
10	1	0	0	1	0	3	3	2	6		
11	2	0	0	1	1	3	2	2	1	1	
12	3	0	0	1	1	5	4	3	2	2	3
13	2	0	0	1	1	1	1	1	1	0	1
14	2	0	0	1	1	2	2	2	1	0	5
15	6	0	0	1	1	5	3	5	4	5	3
16	2	0	0	1	1	2	2	1	1	1	2
17	3	0	0	0	0	2	2	1	1	3	1
18	3	0	0	1	1	4	4	2	2	3	2
19	2	0	0	1	1	3	2	1	1	1	2
20	1	0	0	0	0	1	1	0	0	1	1
21	0	0	0	0	0	0	0	0	0	0	0
22	2	0	1	1	2	5	5	2	5	4	2

	1	2	3	4	5	6	7	8	9	10	11
23	2	0	0	1	1	3	6	2	3	3	3
24	2	0	0	1	1	2	3	1	1	1	4
25	2	0	0	1	1	1	1	1	1	0	1
26	2	0	0	1	1	2	2	1	1	1	5
27	1	0	0	1	1	1	1	1	1	0	1
28	1	0	0	1	1	1	1	1	1	0	1
29	1	0	0	1	1	1	1	1	1	0	2
30	1	0	0	1	1	1	1	1	1	0	1
31	1	0	0	1	1	1	1	1	1	0	1
32	1	0	0	1	1	1	1	1	1	0	1
33	1	0	0	1	1	1	1	1	1	0	1
34	1	0	0	1	2	2	1	1	1	0	4
35	3	1	0	1	1	3	2	1	1	1	2
36	2	0	0	1	1	3	2	1	1	1	4
37	0	0	0	0	0	0	0	0	0	0	0
38	4	1	0	2	2	2	2	1	1	1	3
39	2	1	0	1	1	2	2	1	1	0	1
40	2	1	0	1	1	1	1	1	1	0	2
41	0	1	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0	0
43	2	0	0	1	1	2	2	1	1	1	2
44	6	1	0	2	2	2	3	0	1	2	0

	1	2	3	4	5	6	7	8	9	10	11
45	3	0	0	1	1	3	2	1	1	1	2
46	1	0	0	1	1	1	1	1	1	0	2

	12	13	14	15	16	17	18	19	20	21	22
13	2										
14	5	2									
15	5	2	3								
16	2	1	1	2							
17	3	1	1	3	1						
18	4	2	3	5	5	3					
19	2	1	1	3	3	1	4				
20	1	0	0	1	2	1	2	4			
21	0	0	0	1	3	0	2	2	1		
22	4	1	1	5	2	2	3	2	1	0	
23	3	1	2	3	2	2	5	2	1	0	6
24	2	1	4	2	2	1	3	2	1	0	3
25	2	2	2	2	1	1	2	1	0	0	1
26	2	1	6	2	2	1	2	2	1	0	2
27	1	1	2	1	1	0	2	1	0	0	1
28	1	1	2	1	1	0	1	1	0	0	1
29	1	1	2	1	3	0	4	1	0	0	1
30	1	1	1	1	1	0	1	1	0	0	1
31	1	1	2	1	3	0	8	1	0	1	1
32	1	1	1	1	1	0	4	1	0	0	1
33	1	1	1	1	1	0	3	1	0	0	1
34	1	1	4	1	3	0	5	1	0	1	1

	12	13	14	15	16	17	18	19	20	21	22
35	2	1	2	3	2	1	5	3	1	0	2
36	2	1	4	3	2	1	4	3	1	0	2
37	0	0	0	0	0	0	0	0	0	0	0
38	2	1	3	3	2	1	4	2	1	0	2
39	1	1	2	2	1	0	2	2	1	0	1
40	1	1	2	2	1	0	1	1	0	0	1
41	0	0	0	0	0	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	0	0	0
43	2	1	1	2	2	1	2	2	1	0	2
44	0	1	1	2	0	2	5	0	0	0	0
45	2	1	1	4	2	1	3	3	1	0	2
46	1	1	3	1	1	0	1	1	0	0	1

	23	24	25	26	27	28	29	30	31	32	33
24	5										
25	1	1									
26	3	3	1								
27	1	1	3	3							
28	2	2	2	4	3						
29	2	2	2	2	3	3					
30	1	1	4	1	3	2	2				
31	2	1	2	2	6	3	5	3			
32	1	1	1	1	1	1	1	1	4		
33	1	1	2	1	3	1	1	2	4	4	
34	2	3	2	4	3	3	5	2	6	1	1
35	3	3	2	3	3	3	3	2	4	1	1
36	3	3	1	5	3	2	2	2	4	3	2
37	0	0	0	0	0	0	0	0	0	0	0
38	3	4	1	4	2	2	2	1	2	2	1
39	2	1	1	2	2	2	2	1	2	1	1
40	1	2	1	2	1	1	1	1	1	1	1
41	0	0	0	0	0	0	0	1	1	1	0
42	0	0	0	0	0	0	0	0	0	0	0
43	2	2	1	2	1	1	1	1	1	1	1
44	0	0	1	0	0	0	0	0	2	2	2
45	2	2	1	2	1	1	1	1	1	1	1
46	2	1	1	2	2	2	2	1	2	1	1

	34	35	36	37	38	39	40	41	42	43	44
35	3										
36	3	4									
37	0	0	1								
38	3	5	4	0							
39	2	4	3	0	4						
40	2	3	2	0	3	4					
41	0	0	1	0	1	1	2				
42	0	0	0	0	0	1	0	1			
43	1	2	2	0	2	1	1	0	0		
44	0	1	0	0	1	2	1	0	0	1	
45	1	3	3	0	2	3	2	0	0	2	1
46	3	2	3	0	2	2	2	0	0	1	0

	45
46	1

2. 1. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,8) [**8**]	**2**. (0,0) [**0**]	**3**. (0,0) [**0**]
4. (0,0) [**0**]	**5**. (0,1) [**1**]	**6**. (1,14) [**15**]
7. (1,9) [**10**]	**8**. (1,2) [**3**]	**9**. (2,4) [**6**]
10. (3,5) [**8**]	**11**. (1,9) [**10**]	**12**. (5,6) [**11**]
13. (0,0) [**0**]	**14**. (2,8) [**10**]	**15**. (9,9) [**18**]
16. (0,6) [**6**]	**17**. (4,1) [**5**]	**18**. (9,14) [**23**]
19. (4,4) [**8**]	**20**. (1,0) [**1**]	**21**. (1,0) [**1**]
22. (7,2) [**9**]	**23**. (9,5) [**14**]	**24**. (6,5) [**11**]
25. (0,2) [**2**]	**26**. (4,6) [**10**]	**27**. (2,8) [**10**]
28. (2,4) [**6**]	**29**. (4,3) [**7**]	**30**. (2,1) [**3**]
31. (6,5) [**11**]	**32**. (2,2) [**4**]	**33**. (4,0) [**4**]
34. (10,4) [**14**]	**35**. (13,5) [**18**]	**36**. (14,4) [**18**]
37. (0,0) [**0**]	**38**. (11,2) [**13**]	**39**. (3,2) [**5**]
40. (3,0) [**3**]	**41**. (0,0) [**0**]	**42**. (0,0) [**0**]
43. (0,0) [**0**]	**44**. (3,0) [**3**]	**45**. (8,0) [**8**]
46. (3,-) [**3**]		

2. 1. 4. Texto resultante tras eliminar las oraciones marginales.

1. On March 12, 1997, Ann Landers advised a writer to believe her boyfriend, who claimed the necklace he had given her for Christmas was “real gold”, despite the fact that it kept turning her neck green.

5. To a chemist, "real" gold might imply "pure" gold. **6**. The gift necklace was surely not “pure” in a chemical sense, because 100%, or 24 carat gold (also spelled "karat", and always marked as "K") is too soft to be practical for use in jewelry. **7**. Jewelry is usually made of 18 or 14 carat gold, whose weight fraction of gold is 18/24 or 14/24, respectively. **8**. The "carat" system was invented by the British in about the year 1300 to facilitate the use of gold in commerce. **9**. In the United States, the lowest allowed carat designation for gold is 10, but a 1/2-carat error is allowed, so that "10K" can be marketed that is only 9.5K, or 39.6% by weight gold. **10**. In Britain, items that are only 9K can be sold, but there is no margin for error on the low side; France's lowest carat designation is 18K. **11**. The rest of the material in the alloy can be a variety of other metals; those most often used are copper, nickel, or silver. **12**. The composition of the alloy is not disclosed in the "carat" marking, and different alloying metals are used to make different colors.

14. The metals used to make different colors are usually:

Yellow: Au, Cu, Ag, Zn
White: Au, Cu, Ni, Zn
Red: Au, Cu
Green: Au, Ag

15. The alloy called “green gold” (which is only slightly greenish) is rarely used, so the boyfriend of Ann Landers’ correspondent was most likely claiming that the gift necklace was one of the recognized alloys whose minimum gold content has been designated in Britain by Hallmarks and there and elsewhere by the carat system.

16. The common phrase “acid text” comes from the practice of testing gold alloys with nitric acid. **17**. An alloy of less than about 9 or 10 carat is quickly turned green. **18**. Compositions up to 18 carat gold alloy can be tested with aqua regia (a mixture of nitric and hydrochloric acid, in roughly equal proportions); the small spot subjected to the acid will immediately become pale yellow, as the base metals that provide some of the color are dissolved. **19**. Instead of risking damage to the piece of yewelry, tests were often done using a “touchstone”, a hard, black, slightly abrasive stone on which the object was rubbed fairly firmly, wiping a small amount of metal onto the stone surface. **20**. The tests were done on the stone and the jewelry could easily be repolished to its original condition. **21**. It is interesting that so many of the words involved in this testing process have survived to the present time: “Hallmark”, “acid test”, and “touchstone”.

22. A perceptive chemist will recognize that the carat marking specifies the minimum weight percentage of gold (only), but neither the identity nor the concentration of the other parts of the alloy. **23**. This means that an 18 carat gold item could have from zero to 25 weight percent copper, which corresponds to zero to 51 mole percent copper. **24**. Mixtures involving nickel and zinc result in about the same mole fraction of the base metals because of the similarity of their average atomic masses to that of copper.

25. The question of whether it is possible to oxidize a metal, and therefore to produce the possibility of a colored salt, is largely reflected in the standard potential. **26**. For the principal elements of the gold alloys, the pertinent numbers are:

$Au^{3+} + 3é \rightarrow Au$ $E^0 = 1.42$ V
$Ag^{+} + é \rightarrow Ag$ $E^0 = 0.80$ V
$Cu^{2+} + 2é \rightarrow Cu$ $E^0 = 0.34$ V
$Ni^{2+} + 2é \rightarrow Ni$ $E^0 = 0.23$ V
$Zn^{2+}\ 2é \rightarrow Zn$ $E^0 = 0.76$ V

27. These data suggest why gold is a “noble” metal: the potential required to oxidize it is near the maximum available in aqueous solutions. **28**. Consider, for example, combining the half-cells

$Au(s) = Au^{3+} + 3é$ $E^0 = -1.42$ V

or

$Cu(s) = Cu^{2+} + 2é$ $E^0 = -0.34$ V

with the half-cell for a good oxidizer, such as:

$NO_3^- + 4H_3O^+ + 3\ é = NO + 6H_2O$ $E^0 = 0.96$ V

29. It is obvious that nitric acid will not oxidize gold but will easily oxidize copper. **30**. However, the prediction of the conditions under which a metal might be oxidized depends upon more than just the potential for producing the “bare” (or hydrated) metal ion. **31**. One must also consider that the metal ion may be stabilized in solution by formation of a complex ion, which is the reason why both the nitric acid oxidant and the hydrochloric acid complexing agent are required when aqua regia (literally, royal water – a phrase coined by alchemists to designate a solvent for “noble” metals) dissolves gold. **32**. When gold is dissolved in aqua regia, the reaction is:

$$Au(s) + 4Cl^- + NO_3^- + 4H_3O^+ = AuCl_4^- + NO(g) + 6H_2O$$

33. Since the potential for

$$AuCl_4^- + 3é \rightarrow Au + 4\ Cl^-$$

is 1.00 vol, the dissolution of gold in aqua regia becomes thermodynamically favorable. **34**. Oxidation by ordinary air (or air contaminated by sulfides) can tarnish silver, copper, and nickel, but pure gold is impervious to attack, even by concentrated nitric or hydrochloric acid acting independently. **35**. The chloride ion in a person’s perspiration can facilitate the oxidation of the base metals in a gold jewelry alloy. **36**. But another factor impacting on whether these metals are leached out of necklaces, earrings, or dental work is the fact that mixtures of gold, silver, and copper with other metals are less reactive than one would predict if their alloys were ideal solutions.

38. When people experience an allergic reaction to “real gold” jewelry, it is almost always one of the base metals that is the culprit, and nickel is by far the most notorious in this respect. **39**. It seems that some people develop an amazingly acute sensitivity to this metal, and this most often occurs after ears are pierced and gold-plated earrings are inserted. **40**. Since the gold plating is usually quite thin and it is often applied on top of a layer of nickel plating, it is not too surprising that the wearer is often exposed to significant amounts of nickel as the gold wears, cracks, and is scratched.

44. If <it> [the necklace] were “real” 14K or 18K, it is unlikely that a person who does not sweat aqua regia would develop a green neck. **45**. It is much more likely that the boyfriend had passed off a gold-plated necklace as more expensive jewelry. **46**. If some misrepresentation occurred in this case, Georgius Agricola reminds us that it was not the fault of the element: “if by means of gold and silver and gems men can overcome the chastity of women, corrupt the honour of many people, bribe the course of justice and commit innumerable wickednesses, it is not the metals which are to be blamed, but the evil passions of men which become inflamed and ignited”

2. 2. Texto 2: *Why gold and copper are colored but silver is not.*

1. It s well known that 80% of chemical elements are metals. **2**. When polished, all metals shine owing to reflection of photons by external valence electrons dynamically forming metallic bonds. **3**. White light reflects on most metals without color absorption or change to the naked eye; but copper and gold are yellow because they absorb “blue” and "red" photons by electron transitions between spectromeric configurations $ns^1(n\text{-}1)d^{10}$ $ns^2(n - 1)d^9$ of external sublevels.

4. The next question is why silver, with the same external electronic configuration as copper and gold (group 11, IB), is not yellow. **5**. The answer is simple, considering atomic radii, ionization potentials and nuclear charge:

	Cu	Ag	Au
Atomic radius/ pm	117.3	133.9	133.6
1^{st} ionization energy / eV	7.725	7.576	9.22
2^{nd} ionization energy / eV	20.29	21.48	20.52
Nuclear charge	25	35	59

6. The atomic radius of silver is 16.6 pm larger than that of copper, allowing a bigger difference between sublevels s and d, which is sufficient to restrict the transition $s^1\ d^{10}$

⇔ s^2d^9 to a lower probability. **7**. This is equally supported by the first ionization energy: since it is lower in silver, the fact that one external electron is ejected more easily than in copper atoms is justified.

8. With their higher nuclear charge (35 vs 25) silver atoms also have larger radii (⇔ = 16.6 pm), and the distance between external sublevels-both spatial and energetic-is too large to freely allow s ⇔ d transitions. **9**. However, the distance is not large enough to prevent the transitions completely, and after several reflections on two parallel silver mirrors, white light becomes pale yellow.

10. Now we must face an unexpected problem: why is gold yellow? **11**. According to the same line of reasoning, gold would be colorless if it had bigger atoms. **12**. But gold atoms are *not* larger than silver; the radii of silver and gold are practically identical owing to lanthanide contraction. **13**. Comparing ionization energies, the value 9.22 eV for gold is about 20% higher than 7.576 eV for silver because gold has a larger nuclear charge (59 vs 35) while its radius is practically the same. **14**. Thus, external s and d sublevels are close enough to allow the necessary transition. **15**. As a result, the probability of transition between sublevels is similar to that of copper, and gold is again yellow.

16. We can now perceive the necessary conditions for a metal to be yellow, like copper and gold:

1. Adequate external electronic configuration s^1d^{10} ⇔ s^2d^9 (group 11, IB).
2. Sublevels s and d close enough to allow transitions s^1d^{10} ⇔ s^2d^9 to occur significantly (Cu, Au).

17. In contrast, all other metals shine silvery, colorless to the naked eye because they do not possess the necessary electronic external configuration and transition probability to appear colored.

18. Much work has been undertaken in connection with relativistic effects on metal properties (6); however a final question remains: are metals (except for Cu and Au) really colorless? **19**. Various tinges are reported, such as yellow for silver and blue for osmium. **20**. How many more will be detected when a complete survey is made? **21**. What number of atomic layers must be crossed (twice) in metals to produce a definite color? **22**. What about the effect of atomic packing, holes, and impurities? **23**. But this is another story and we would be very happy if research is aroused and enhanced by our questions.

2. 2. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. metals – metals				
3	**rs**. metals – metals	**rs**. metals – metals **rc**. reflection-reflects **rs**. photons – photons **rs**. external – external **rs**. electrons-electron			
4	**tr**. metals - silver	**tr**. metals - silver **rs**. external – external **rc**. electrons – electronic	**tr**. metals - silver **rs**. copper – copper **rs**. gold – gold **rs**. yellow – yellow **rc**. electron – electronic **rs**. configurations – configuration **rs**. external – external		
5	**tr**. metal – Cu, Ag, Au	**tr**. metal – Cu, Ag, Au	**psm**. copper – Cu **psm**. gold –Au	**e**. question – 0 **psm**. silver – Ag **psm**. copper – Cu **psm**. gold –Au	
6	**tr**. metals – silver	**tr**. metals – silver	**tr**. metals – silver **rs**. copper – copper **e**. electron – 0 **rs**. transitions – transition **rs**. $ns^1(n\text{-}1)d^{10}$ □ $ns^2(n - 1)d^9$ – s^1d^{10} □ s^2d^9 **e**. external – 0 **rs**. sublevels – sublevels	**rs**. silver – silver **rs**. copper – copper	**rs**. atomic – atomic **rs**. radii – radius **psm**. Cu – copper **psm**. Ag – silver
7	**tr**. metals – silver	**tr**. metals – silver **rs**. external – external **rs**. electrons – electron	**tr**. metals – silver **rs**. copper – copper **rs**. electron – electron **rs**. external – external	**rs**. silver – silver **rs**. external – external **rc**. electronic – electron **rs**. copper – copper	**rc**. atomic – atoms **psm**. 1st – first **rs**. ionization – ionization **rs**. energy – energy **psm**. Cu – copper **psm**. Ag – silver
8	**tr**. metals – silver	**tr**. metals – silver **rs**. external – external	**tr**. metals – silver **e**. electron – 0 **rs**. transitions – transitions **hip**. $ns^1(n\text{-}1)d^{10}$ □ $ns^2(n - 1)d^9$ – s □ d **rs**. external – external **rs**. sublevels – sublevels	**rs**. silver – silver **rs**. external – external	**rc**. atomic – atoms **rs**. radii – radii **pc**. potentials – energetic (**energy**) **rs**. nuclear – nuclear **rs**. charge – charge **rs**.25 – 25 **rs**. 35 – 35 **psm**. Ag – silver

	1	2	3	4	5
9	**tr**. metals – silver	**tr**. metals – silver **rs**. reflection – reflections **e**. photons – 0	**rs**. white – white **rs**. light – light **rc**. reflects – reflections **tr**. metals - silver **rs**. yellow – yellow **e**. electron – 0 **rs**. transitions – transitions	**rs**. silver – silver **rs**. yellow – yellow	**psm**. Ag – silver
10	**tr**. metals – gold	**tr**. metals – gold	**rs**. gold – gold **rs**. yellow – yellow	**rs**. gold – gold **rs**. yellow – yellow	**psm**. Au – gold
11	**tr**. metals – gold	**tr**. metals – gold	**rc**. color – colorless **rs**. gold – gold	**rs**. gold – gold **tr**. yellow - colorless	**rc**. atomic – atoms **psm**. Au – gold
12	**tr**. metals – silver	**tr**. metals - silver	**tr**. metals – silver **rs**. gold – gold	**rs**. silver – silver **rs**. gold – gold	**rc**. atomic – atoms **rs**. radii – radii **psm**. Au – gold **psm**. Ag – silver
13	**tr**. metals – silver	**tr**. metals – silver	**tr**. metals – silver **rs**. gold – gold	**rs**. silver – silver **rs**. gold – gold	**rs**. radii – radius **rs**. ionization – ionization **psm**. potentials – energies **rs**. nuclear – nuclear **rs**. charge – charge **psm**. Au – gold **psm**. Ag – silver **rs**. 9.22 – 9.22 **rs**. 7.76 – 7.576
14		**rs**. external – external	**e**. electron – 0 **rs**. transitions – transition **hip**. ns^1(n-1)d^{10} □ ns^2(n - 1)d^9 – s and d **rs**. external – external **rs**. sublevels – sublevels	**rs**. external – external	
15	**tr**. metals – gold	**tr**. metals – gold	**rs**. copper – copper **rs**. gold – gold **rs**. yellow – yellow **e**. electron – 0 **rs**. transitions – transition **e**. external – 0 **rs**. sublevels – sublevels	**rs**. copper – copper **rs**. gold – gold **rs**. yellow – yellow	**psm**. Cu – copper **psm**. Au – gold
16	**rs**. metals – metal	**rs**. metals - metal **rs**. external – external **rc**. electrons -. electronic	**rs**. metals – metal **rs**. copper – copper **rs**. gold – gold **rs**. yellow – yellow **rc**. electron – electronic **rs**. transitions – transitions **rs**. configurations – configuration **rs**. ns^1 (n-1)d^{10} □ ns^2 (n-1)d^9 - s^{1}d^{10} □ s^{2}d^9 **rs**. external – external **rs**. sublevels – sublevels	**hip**. silver – metal **rs**. external – external **rs**. electronic – electronic **rs**. configuration – configuration **rs**. copper – copper **rs**. gold – gold **rs**. yellow – yellow	**rs**. Cu – Cu **rs**. Au – Au

	1	2	3	4	5
17	**rs**. metals – metals	**rs**. metals – metals **rs**. shine – shine **rs**. external – external **rc**. electrons – electronic	**rs**. metals – metals **rc**. color – colorless **rs**. naked – naked **rs**. eye – eye **rc**. electron – electronic **rs**. transitions – transition **rs**. configurations – configuration **rs**. external – external	**rc**. silver – silvery **rs**. external – external **rs**. electronic – electronic **rs**. configuration – configuration **tr**. yellow - colorless	**pc**. Ag – sivery (**silver**)
18	**rs**. metals – metals	**rs**. metals – metals	**rs**. metals – metals **rc**. color – colorless **psm**. copper – Cu **psm**. gold – Au	**rs**. question – question **hip**. silver – metals **psm**. copper – Cu **psm**. gold – Au **tr**. yellow - colorless	**rs**. Cu – Cu **rs**. Au – Au
19	**tr**. metals – silver	**tr**. metals – silver	**tr**. metals – silver **rs**. yellow – yellow	**rs**. silver – silver **rs**. yellow – yellow	**psm**. Ag – silver
20					
21	**rs**. metals – metals	**rs**. metals – metals	**rs**. metals – metals **rs**. color – color	**hip**. silver – metals **hip**. yellow – color	**rs**. atomic – atomic **hip**. Cu, Ag, Au – metals
22					**rs**. atomic – atomic
23				**rs**. question – questions	

	6	7	8	9	10
7	**d**. orac. 6 – this **rc**. atomic – atoms **rs**. silver – silver **rs**. copper – copper				
8	**rc**. atomic – atoms **rs**. radius – radii **rs**. silver – silver **rs**. 16.6pm – 16.6pm **rs**. larger – larger **e**. copper – 0 **rs**. allowing – allow **pc**. bigger – large (**big**) **psm**. difference – distance **rs**. sublevels – sublevels **rs**. transition – transitions **hip**. s^1d^{10} s^2d^9 – s d	**rc**. energy – energetic **rs**. silver – silver **rs**. atoms – atoms			
9	**rs**. silver – silver **pc**. bigger – large (**big**) **psm**. difference – distance **e**. between sublevels – 0 **psp**. sufficient – enough **psm**. restrict – prevent **rs**. transition – transitions **e**. s^1d^{10} s^2d^9 – 0	**rs**. silver – silver	**rs**. silver – silver **rs**. distance – distance **e**. between external sublevels – 0 **rs**. large – large **a**. allow – prevent **e**. s d – 0 **rs**. transitions – transitions		
10	**tr**. silver – gold	**tr**. silver – gold	**tr**. silver – gold	**tr**. silver – gold **rs**. yellow – yellow	
11	**d**. oración 6, 7, 8, 9 – same **rc**. atomic – atoms **tr**. silver – gold	**tr**. silver – gold **rs**. atoms – atoms	**tr**. silver – gold **rs**. atoms – atoms **rs**. have – had **psm**. larger – bigger	**tr**. silver – gold **tr**. yellow – colorless	**rs**. gold – gold **tr**. yellow – colorless
12	**rc**. atomic – atoms **rs**. radius – radii **rs**. silver – silver **rs**. larger - larger	**rs**. silver – silver **rs**. atoms – atoms	**rs**. silver – silver **rs**. atoms – atoms **rs**. larger – larger **rs**. radii – radii	**rs**. silver – silver	**rs**. gold – gold
13	**rs**. radius – radius **rs**. silver – silver	**rs**. ionization – ionization **rs**. energy – energies **a**. lower – higher **rs**. silver – silver	**psm**. higher – larger **rs**. nuclear – nuclear **rs**. charge – charge **rs**. silver – silver **rs**. radii – radius **rc**. energetic – energies	**rs**. silver – silver	**rs**. gold – gold

	6	7	8	9	10
14	**rs**. sublevels – sublevels **rs**. s – s **rs**. d – d **psp**. sufficient – enough **a**. restrict – allow **rs**. transition – transition		**rs**. external – external **rs**. sublevels – sublevels **rs**. allow – allow **e**. s □ d – 0 **rs**. transitions – transition	**rs**. enough – enough **a**. prevent – allow **rs**. transitions- transition	
15	**tr**. silver – gold **rs**. copper – copper **rs**. sublevels – sublevels **rs**. transition – transition **rs**. probability – probability	**tr**. silver – gold **rs**. copper – copper	**tr**. silver – gold **e**. external – 0 **rs**. sublevels – sublevels **e**. s □ d – 0 **rs**. transitions – transition	**rs**. transitions – transition **tr**. silver – gold **rs**. yellow – yellow	**rs**. gold – gold **rs**. yellow – yellow
16	**tr**. silver – metal **rs**. copper – copper **rs**. sublevels – sublevels **rs**. s – s **rs**. d – d **psp**. sufficient – enough **a**. restrict – allow **rs**. transition – transitions **rs**. s^1d^{10} □ s^2d^9 - s^1d^{10} □ s^2d^9	**hip**. silver – metal **rs**. external – external **rc**. electron – electronic **rs**. copper – copper	**hip**. silver – metal **rs**. external – external **rs**. sublevels – sublevels **rs**. allow – allow **tr**. s □ d - s^1d^{10} □ s^2d^9 **rs**. transitions – transitions	**rs**. enough – enough **a**. prevent – allow **rs**. transitions – transitions **hip**. silver – metal **rs**. yellow – yellow	**rs**. we – we+ **rs**. gold – gold **rs**. yellow – yellow
17	**rc**. silver – silvery **rs**. transition – transition **rs**. probability – probability	**rc**. silver – silvery **rs**. external – external **rc**. electron – electronic	**rc**. silver – silvery **rs**. external – external **e**. s □ d – 0 **rs**. transitions – transition	**rs**. transitions – transition **rc**. silver – silvery **tr**. yellow - colorless	**hip**. gold – metals **tr**. yellow – colorless
18	**hip**. silver – metals **psm**. copper - Cu	**hip**. silver – metals **psm**. copper – Cu	**hip**. silver – metals	**hip**. silver – metals **tr**. yellow - colorless	**psm**. gold – Au **tr**. yellow – colorless
19	**rs**. silver – silver	**rs**. silver – silver	**rs**. silver – silver	**rs**. silver – silver **rs**. yellow – yellow	**tr**. gold – silver **rs**. yellow – yellow
20					
21	**rs**. atomic – atomic **hip**. silver – metals	**hip**. silver – metals **rc**. atoms – atomic	**hip**. silver – metals **rc**. atoms – atomic	**hip**. silver – metals **hip**. yellow – color	**hip**. gold – metals **hip**. yellow – color
22	**rs**. atomic – atomic	**rc**. atoms – atomic	**rc**. atoms – atomic		
23					**rs**. we – we+

	11	12	13	14	15
12	**rs**. gold – gold **psm**. bigger – larger **rs**. atoms – atoms				
13	**rs**. gold – gold	**rs**. gold – gold **rs**. silver – silver **rs**. radii – radius **rs**. practically – practically **psm**. identical – same			
14					
15	**rs**. gold – gold **tr**. colorless – yellow	**rs**. gold – gold	**rs**. gold – gold	**e**. external s and d - 0 **rs**. sublevels – sublevels **rs**. transition – transition	
16	**rs**. gold – gold **tr**. colorless – yellow	**rs**. gold – gold **hip**. silver – metal	**rs**. gold – gold	**rs**. external – external **rs**. s – s **rs**. d – d **rs**. sublevels – sublevels **rs**. close – close **rs**. enough – enough **rs**. allow – allow **rs**. transition – transitions	**rs**. transition – transitions **rs**. sublevels – sublevels **rs**. copper – copper **rs**. gold – gold **rs**. yellow – yellow
17	**hip**. gold – metals **rs**. colorless – colorless	**rc**. silver – silvery	**hip**. silver – metals	**rs**. external – external **rs**. necessary – necessary **rs**. transition – transition	**rs**. probability – probability **rs**. transition – transition **hip**. gold – metals **tr**. yellow – colorless
18	**psm**. gold – Au **rs**. colorless – colorless	**psm**. gold – Au **hip**. silver – metal	**psm**. gold – Au		**psm**. copper – Cu **psm**. gold – Au **tr**. yellow – colorless
19	**tr**. gold – silver **tr**. colorless – yellow	**rs**. silver – silver	**rs**. silver – silver		**tr**. gold – silver **rs**. yellow – yellow
20					
21	**hip**. gold – metals **rc**. colorless – color **rc**. atoms – atomic	**rc**. atoms – atomic **hip**. silver – metals	**hip**. gold – metals		**hip**. gold – metals **hip**. yellow – color
22	**rc**. atoms – atomic	**rc**. atoms – atomic			
23					

	16	17	18	19	20
17	**rs**. metal – metals **tr**. yellow – colorless **psm**. adequate – necessary **rs**. external – external **rs**. electronic – electronic **rs**. configuration – configuration **rs**. transitions – transition				
18	**rs**. metal – metals **tr**. yellow – colorless **psm**. copper – Cu **psm**. gold – Au	**rs**. metals – metals **rs**. colorless – colorless			
19	**rs**. yellow – yellow	**rc**. silvery – silver **tr**. colorless – yellow	**tr**. metals – silver **tr**. colorless – yellow		
20			**psm**. work – survey **psm**. undertaken – made	**e**. tinges – 0	
21	**rs**. metal – metals **hip**. yellow – color	**rs**. metals – metals **rc**. colorless – color	**rs**. metals – metals **rc**. colorless – color	**hip**. yellow – color **hip**. silver – metals	
22					
23			**psm**. work – research **rs**. question – questions		**d**. oración 20 – this **psm**. survey – research

	21	22
22	**rs**. atomic – atomic **e**. in metals to produce a definite color – 0	
23		**d**. oración 21, 22 – this

2. 2. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2	1														
3	1	5													
4	1	3	7												
5	1	1	2	4											
6	1	1	7	2	4										
7	1	3	4	4	6	4									
8	1	2	6	2	8	12	3								
9	1	3	7	2	1	8	1	7							
10	1	1	2	2	1	1	1	1	2						
11	1	1	2	2	2	3	2	4	2	2					
12	1	1	2	2	4	4	2	4	1	1	3				
13	1	1	2	2	9	2	4	6	1	1	1	5			
14	0	1	5	1	0	6	0	5	3	0	0	0	0		
15	1	1	7	3	2	5	2	5	3	2	2	1	1	3	
16	1	3	10	7	2	9	4	6	5	2(3)	2	2	1	8	5
17	1	4	8	5	1	3	3	4	3	2	2	1	1	3	4
18	1	1	4	5	2	2	2	1	2	2	2	2	1	0	3
19	1	1	2	2	1	1	1	1	2	2	2	1	1	0	2
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	1	1	2	2	2	2	2	2	2	2	3	2	1	0	2
22	0	0	0	0	1	1	1	1	0	0	1	1	0	0	0
23	0	0	0	1	0	0	0	0	0	0 (1)	0	0	0	0	0

	16	17	18	19	20	21	22
17	7						
18	4	2					
19	1	2	2				
20	0	0	2	1			
21	2	2	2	2	0		
22	0	0	0	0	0	2	
23	0	0	2	0	2	0	1

2. 2. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,0) [**0**]
2. (0,6) [**6**]
3. (1,10) [**11**]
4. (2,6) [**8**]
5. (1,5) [**6**]
6. (2,9) [**11**]
7. (5,4) [**9**]
8. (4,8) [**12**]
9. (4,4) [**8**]
10. (0,0) [**0**] (0,1) [**1**]
11. (2,2) [**4**]
12. (4,1) [**5**]
13. (4,0) [**4**]
14. (4,3) [**7**]
15. (6,3) [**9**]
16. (9,2) [**11**] (10,2) [**12**]
17. (10,0) [**10**]
18. (4,0) [**4**]
19. (0,0) [**0**]
20. (0,0) [**0**]
21. (1,0) [**1**]
22. (0,0) [**0**]
23. (0,-) [**0**]

2. 2. 4. Texto resultante tras eliminar las oraciones marginales.

2. When polished, all metals shine owing to reflection of photons by external valence electrons dynamically forming metallic bonds. **3**. White light reflects on most metals without color absorption or change to the naked eye; but copper and gold are yellow because they absorb "blue" and "red" photons by electron transitions between spectromeric configurations $ns^1(n\text{-}1)d^{10}$ □ $ns^2(n - 1)d^9$ of external sublevels.

4. The next question is why silver, with the same external electronic configuration as copper and gold (group 11, IB), is not yellow. **5**. The answer is simple, considering atomic radii, ionization potentials and nuclear charge:

	Cu	Ag	Au
Atomic radius/ pm	117.3	133.9	133.6
1^{st} ionization energy / eV	7.725	7.576	9.22
2^{nd} ionization energy / eV	20.29	21.48	20.52
Nuclear charge	25	35	59

6. The atomic radius of silver is 16.6 pm larger than that of copper, allowing a bigger difference between sublevels s and d, which is sufficient to restrict the transition $s^1\ d^{10}$ □ $s^2\ d^9$ to a lower probability. **7**. This is equally supported by the first ionization energy: since it is lower in silver, the fact that one external electron is ejected more easily than in copper atoms is justified.

8. With their higher nuclear charge (35 vs 25) silver atoms also have larger radii (□ = 16.6 pm), and the distance between external sublevels-both spatial and energetic-is too large to freely allow s □ d transitions. **9**. However, the distance is not large enough to prevent the transitions completely, and after several reflections on two parallel silver mirrors, white light becomes pale yellow.

[4]**11**. According to the same line of reasoning, gold would be colorless if it had bigger atoms. **12**. But gold atoms are *not* larger than silver; the radii of silver and gold are practically identical owing to lanthanide contraction. **13**. Comparing ionization energies, the value 9.22 eV for gold is about 20% higher than 7.576 eV for silver because gold has a larger nuclear charge (59 vs 35) while its radius is practically the same. **14**. Thus, external s and d sublevels are close enough to allow the necessary

4 La oración 10 establece una conexión mediante un enlace dudoso. Puede eliminarse sin afectar a la coherencia del texto original.

transition. **15**. As a result, the probability of transition between sublevels is similar to that of copper, and gold is again yellow.

16. We can now perceive the necessary conditions for a metal to be yellow, like copper and gold:

1. Adequate external electronic configuration $s^1d^{10} \rightarrow s^2d^9$ (group 11, IB).
2. Sublevels s and d close enough to allow transitions $s^1d^{10} \rightarrow s^2d^9$ to occur significantly (Cu, Au).

17. In contrast, all other metals shine silvery, colorless to the naked eye because they do not possess the necessary electronic external configuration and transition probability to appear colored.

18. Much work has been undertaken in connection with relativistic effects on metal properties (6); however a final question remains: are metals (except for Cu and Au) really colorless? **21**. What number of atomic layers must be crossed (twice) in metals to produce a definite color?

2. 3. Texto 3: *Both nylon and PET fibers burn continuously under atmospheric conditions.*

1. We would like to present two series of photographs showing the characteristic burning behaviors of a nylon fiber and a polyethyleneterephthalate (PET) fiber, in order to help people safely handle these fibers in their everyday lives.

2. In many textbooks, especially on textiles, nylon and PET fibers are classified as flammable but self-extinguishing. **3**. In other references, we have read that nylon and PET give off combustible gases when they are heated above their decomposition temperatures. **4**. According to references, nylon gives propylene (8.8% in volume of total detected gases evolved), cyclopentanone (32.2%), hexamethylenediamine and other methylene amines (22.5%), and others (3), and PET gives ethylene (8.3% in volume of total detected gases evolved), acetaldehyde (10.9%), benzoic acid (37.5%), and other phenyl compounds.

5. On the basis of these pyrolysis data, we were doubtful about the flammable but self-extinguishing classification for nylon and PET. **6**. So we very carefully performed experiments to see what would happen when fibers caught fire. **7**. We selected typical sewing threads for sewing machine (supplied by Teijin Co., Ltd., and Asahi Chemicals Co., Ltd.) for testing.

8. Thread samples about 50 cm long were hung up just in front of a focused camera and then ignited at the bottom end with a tiny flame from a cigarette lighter. **9**. A tiny flame was used because hot air ascended from a big flame and perturbed the thread. **10**. Once a part of the terminal end was ignited, it burned continuously, as shown in the series of photographs in this paper, in contrast to the descriptions in textbooks stating that it "burns slowly but if the sample is removed from the flame it self-extinguishes".

11. In nylon thread, as seen in Figure 1, the flame propagates slowly. **12**. In PET thread, shown in Figure 2, the flame propagates more quickly and is accompanied by black smoke. **13**. Unlike natural fibers such as cellulose, these materials first melt, then give off combustible gases when the temperature exceeds the decomposition temperature of the polymers in the presence of about 21 % of oxygen (i.e., under atmospheric conditions).**14**. When the ignition flame was removed, the threads continued to burn. **15**. During the course of the burning, pictures were taken of the small spherical fire balls composed of a molten polymer. **16**. A shutter speed of one one-thousandth of a second and a highly sensitive film (ASA 800) were used. **17**. Because the fire ball is changing rapidly, the photographs show scenes that cannot be seen by the naked eye.

18. Caution: We urge you to remember that these small fire balls are composed of viscous molten polymer. **19**. They have specific heats that are not only high enough to burn skin but also high enough to cause a big fire. **20**. If you want to do this type of experiment, you should wear a glove made of non- flammable fibers so your hand will not be burned.

2. 3. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. nylon – nylon **rs**. PET – PET **rs**. fibers – fibers				
3	**rs**. we – we+ **rs**. nylon – nylon **rs**. PET – PET **e**. fiber – 0	**hip**. textbooks – references **rs**. nylon – nylon **rs**. PET – PET **e**. fibers – 0 **psm**. flammable - combustible			
4	**rs**. nylon – nylon **rs**. PET – PET **e**. fiber – 0	**hip**. textbooks – references **rs**. nylon – nylon **rs**. PET – PET **e**. fibers – 0	**rs**. references – references **rs**. nylon – nylon **rs**. PET – PET **psm**. give off – give **rs**. gases – gases		
5	**rs**. we – we+ **rs**. nylon – nylon **rs**. PET – PET **e**. fiber – 0	**rs**. nylon – nylon **rs**. PET – PET **e**. fibers – 0 **rc**. classified – classification **rs**. flammable – flammable **rs**. self-extinguishing – self-extinguishing	**rs**. we – we+ **rs**. nylon – nylon **rs**. PET – PET **psm**. combustible – flammable	**d**. gives..... compounds – these **rs**. nylon – nylon **rs**. PET – PET	
6	**rs**. we – we+ **rs**. fibers – fibers	**e**. nylon and PET– 0 **rs**. fibers – fibers	**rs**. we – we+ **hip**. nylon and PET – fibers	**hip**. nylon and PET – fibers	**rs**. we – we+ **hip**. nylon and PET – fibers
7	**rs**. we – we+		**rs**. we – we+		**rs**. we – we+
8					
9					
10	**rs**. series – series **rs**. photographs – photographs **rs**. showing – shown **rc**. burning – burned	**rs**. textbooks – textbooks **hip**. nylon PET – sample **pc**. classified – descriptions (**described**) **rc**. self-extinguishing – self- extinguishes	**tr**. references – textbooks		**rc**. self-extinguishing – self- extinguishes **psp**. classification – descriptions **hip**. nylon and PET – sample

	1	2	3	4	5
11	**psp**. photographs – figure **rs**. nylon – nylon	**rs**. nylon – nylon	**rs**. nylon – nylon	**rs**. nylon – nylon	**rs**. nylon – nylon
12	**psp**. photographs – figure **rs**. showing – shown **rs**. PET – PET	**rs**. PET – PET	**rs**. PET – PET	**rs**. PET – PET	**rs**. PET – PET
13	**hip**. nylon/PET – polymers **rs**. fibers – fibers	**hip**. nylon/PET – polymers **rs**. fibers – fibers **psm**. flammable – combustible	**hip**. nylon/PET – polymers **rs**. give off – give off **rs**. combustible – combustible **rs**. gases – gases **rs**. decomposition – decomposition **rs**. temperatures – temperature	**hip**. nylon/PET – polymers **psm**. gives – give off **rs**. gases – gases	**psm**. flammable – combustible **hip**. nylon/PET – polymers
14	**rc**. burning – burn				
15	**psm**. photographs – pictures **rc**. burning – burning **hip**. nylon/PET - polymer	**hip**. nylon/PET – polymer	**hip**. nylon/PET – polymer	**hip**. nylon/PET – polymer	**hip**. nylon/PET - polymer
16					
17	**rs**. photographs – photographs **rs**. showing – show				
18	**rs**. we – we+ **hip**. nylon/PET – polymer	**hip**. nylon/PET – polymer	**rs**. we – we+ **hip**. nylon/PET – polymer	**hip**. nylon/PET – polymer	**rs**. we – we+ **hip**. nylon/PET – polymer
19	**rc**. burning – burn		**rc**. heated – heats		
20	**rc**. burning – burned **rc**. handle – hand **rs**. fibers – fibers	**rs**. fibers – fibers **rc**. flammable – non-flammable	**hip**. nylon/PET – fibers **pc**. combustible – non-flammable (**flammable**)	**hip**. nylon/PET – fibers	**rc**. flammable – non-flammable **hip**. nylon/PET – fibers

	6	7	8	9	10
7	**rs**. we – we+				
8	**psm**. caught fire – ignited	**rs**. threads – thread			
9		**rs**. threads – thread	**rs**. thread– thread **e**. samples – 0 **rs**. tiny – tiny **rs**. flame – flame		
10	**psm**. caught fire – ignited		**e**. thread – 0 **rs**. samples – sample **rs**. ignited – ignited **psm**. bottom – terminal **rs**. end – end	**rs**. flame – flame **e**. thread – 0	
11	**tr**. fibers – nylon **rs**. see – seen	**rs**. threads – thread	**rs**. thread – thread **rs**. flame – flame	**rs**. thread – thread **rs**. flame – flame	**psp**. photographs – figure **rs**. slowly – slowly **rs**. flame – flame
12	**tr**. fibers – PET	**rs**. threads – thread	**rs**. thread – thread **rs**. flame – flame	**rs**. thread – thread **rs**. flame – flame	**rs**. shown – shown **psp**. photographs – figure **a**. slowly – quickly **rs**. flame – flame
13	**rs**. fibers – fibers	**hip**. threads – materials	**hip**. threads – materials	**hip**. threads – materials	
14	**pc**. caught fire – ignition (**ignited**)	**rs**. threads – threads	**rs**. thread – treads **e**. samples – 0 **rc**. ignited – ignition **rs**. flame – flame	**rs**. flame – flame **rs**. tread – threads	**rc**. ignited – ignition **psm**. burned continuously – continued to burn **rs**. removed – removed **rs**. flame – flame
15	**tr**. fibers – polymer				**psp**. photographs – pictures **rc**. burns – burning

	6	7	8	9	10
16				**rs**. used – used	
17	**rs**. see – seen				**rs**. shown – show **rs**. photographs – photographs
18	**rs**. we – we+ **tr**. fibers – polymer	**rs**. we – we+			
19	**rs**. fire – fire				**rs**. burns – burn
20	**rs**. experiments – experiment **rs**. fibers – fibers		**d**. oración 8 – this		**rs**. burns – burned

	11	12	13	14	15
12	**tr**. nylon – PET **rs**. thread – thread **rs**. figure – figure **rs**. flame – flame **rs**. propagates – propagates **a**. slowly – quickly				
13	**hip**. nylon - polymers **hip**. thread – materials	**hip**. PET – polymers **hip**. thread – materials			
14	**rs**. thread – threads **rs**. flame – flame	**rs**. thread – threads **rs**. flame – flame	**tr**. materials – threads		
15	**psp**. figure – pictures **hip**. nylon – polymer	**psp**. figure – pictures **hip**. PET – polymer	**pc**. melt – molten (**melted**) **rs**. polymers – polymer	**rc**. burn – burning	
16					
17	**psp**. figure – photographs **rs**. seen – seen	**rs**. shown – show **psm**. figure – photographs			**psm**. pictures – photographs **rs**. fire – fire **rs**. balls - ball
18	**hip**. nylon – polymer	**hip**. PET – polymer	**pc**. melt – molten (**melted**) **rs**. polymers – polymer		**rs**. small – small **rs**. fire – fire **rs**. balls – balls **rs**. composed – composed **rs**. molten – molten **rs**. polymer – polymer
19				**rs**. burn – burn	**rc**. burning – burn **s**. small ....balls – they **rs**. fire – fire
20	**hip**. nylon – fibers	**hip**. PET – fibers	**rs**. fibers – fibers **pc**. combustible – non-flammable (**flammable**)	**rs**. burn – burned	**psm**. composed – made* **rc**. burning – burned **tr**. polymer – fibers

	16	17	18	19
17				
18		**rs**. fire – fire **rs**. ball – balls		
19			**s**. small fire balls – they	
20			**rs**. you – you+ **psm**. composed – made* **tr**. polymer – fibers	**rs**. burn – burned

2. 3. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11
2	3										
3	3(4)	5									
4	3	4	5								
5	3(4)	6	3(4)	3							
6	1(2)	2	1(2)	1	1(2)						
7	0(1)	0	0(1)	0	0(1)	0(1)					
8	0	0	0	0	0	1	1				
9	0	0	0	0	0	0	1	4			
10	4	4	1	0	3	1	0	5	2		
11	2	1	1	1	1	2	1	2	2	3	
12	3	1	1	1	1	1	1	2	2	4	6
13	2	3	6	3	2	1	1	1	1	0	2
14	1	0	0	0	0	1	1	4	2	4	2
15	3	1	1	1	1	1	0	0	0	2	2
16	0	0	0	0	0	0	0	0	1	0	0
17	2	0	0	0	0	1	0	0	0	2	2
18	1(2)	1	1(2)	1	1(2)	1(2)	0(1)	0	0	0	1
19	1	0	1	0	0	1	0	0	0	1	0
20	3	2	2	1	2	2	0	1	0	1	1

	12	13	14	15	16	17	18	19
13	2							
14	2	1						
15	2	2	1					
16	0	0	0	0				
17	2	0	0	3	0			
18	1	2	0	6	0	2		
19	0	0	1	3	0	0	1	
20	1	2	1	2(3)	0	0	1(3)	1

2. 3. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,8) [**8**]	**2**. (1,5) [**6**]	**3**. (2,3) [**5**]
4. (3,2) [**5**]	**5**. (4,1) [**5**]	**6**. (0,0) [**0**]
7. (0,0) [**0**]	**8**. (0,3) [**3**]	**9**. (1,0) [**1**]
10. (4,3) [**7**]	**11**. (1,1) [**2**]	**12**. (3,0) [**3**]
13. (3,0) [**3**]	**14**. (2,0) [**2**]	**15**. (1,3) [**4**] (1,4) [**5**]
16. (0,0) [**0**]	**17**. (1,0) [**1**]	**18**. (1,0) [**1**] (1,1) [**2**]
19. (1,0) [**1**]	**20**. (1,-) [**1**] (3,-) [**3**]	

2. 3. 4. Texto resultante tras eliminar las oraciones marginales.

1. We would like to present two series of photographs showing the characteristic burning behaviors of a nylon fiber and a polyethyleneterephthalate (PET) fiber, in order to help people safely handle these fibers in their everyday lives.

2. In many textbooks, especially on textiles, nylon and PET fibers are classified as flammable but self-extinguishing. **3**. In other references, we have read that nylon and PET give off combustible gases when they are heated above their decomposition temperatures. **4**. According to references, nylon gives propylene (8.8% in volume of total detected gases evolved), cyclopentanone (32.2%), hexamethylenediamine and other methylene amines (22.5%), and others (3), and PET gives ethylene (8.3% in volume of total detected gases evolved), acetaldehyde (10.9%), benzoic acid (37.5%), and other phenyl compounds.

5. On the basis of these pyrolysis data, we were doubtful about the flammable but self-extinguishing classification for nylon and PET.

8. Thread samples about 50 cm long were hung up just in front of a focused camera and then ignited at the bottom end with a tiny flame from a cigarette lighter. **9**. A tiny flame was used because hot air ascended from a big flame and perturbed the thread. **10**. Once a part of the terminal end was ignited, it burned continuously, as shown in the series of photographs in this paper, in contrast to the descriptions in textbooks stating that it "burns slowly but if the sample is removed from the flame it self-extinguishes".

11. In nylon thread, as seen in Figure 1, the flame propagates slowly. **12**. In PET thread, shown in Figure 2, the flame propagates more quickly and is accompanied by black smoke. **13**. Unlike natural fibers such as cellulose, these materials first melt, then give off combustible gases when the temperature exceeds the decomposition temperature of the polymers in the presence of about 21 % of oxygen (i.e., under atmospheric conditions).**14**. When the ignition flame was removed, the threads continued to burn. **15**. During the course of the burning, pictures were taken of the small spherical fire balls composed of a molten polymer. **17**. Because the fire ball is changing rapidly, the photographs show scenes that cannot be seen by the naked eye.

18. Caution: We urge you to remember that these small fire balls are composed of viscous molten polymer. **19**. They have specific heats that are not only high enough to burn skin but also high enough to cause a big fire. **20**. If you want to do this type of experiment, you should wear a glove made of non- flammable fibers so your hand will not be burned.

2. 4. Texto 4: *A chromatographic parable*.

1. In thirty years of teaching separations courses, I have often searched for an apt allegory to illustrate the fundamentals of chromatographic processes. **2**. The following is one version of such a tale that students seem to find interesting and perhaps even informative.

3. In a small Southern town (it must be a Southern town or the story doesn't work), the people are planning a Fourth of July race from one end of town to the other. **4**. The townsfolk have the commonly observed characteristics that most of them are either Saints or Sinners; however, some of the folks are neither Saints nor Sinners (The Agnostic-Teetotalers) and others are both Saints and Sinners (we'11 call this group the Hypocrites). **5**. The race will be conducted along the main street of town, and, as in most Southern towns, the street is lined with a suitable collection of churches and bars.

6. During the race the town folks all run at the same speed, but the Saints cannot pass a church without entering to pray for a while, and the Sinners cannot possibly pass by a bar without pausing for a refreshing beer. **7**. The immediate question then is who will win the 4th of July race? **8**. Most people want the Saints to win the race, but this is not probable because, while they are in church, the Agnostic-Teetotalers are still running. **9**. It is fairly obvious, even to college students, that the Agnostic-Teetotalers will win the race, and, quite deservedly, the Hypocrites will come in last. **10**. But what about the Saints and Sinners? **11**. Who will come in second or third? **12**. And finally, what can be done by the City Fathers to alter the outcome of the race next year?

13. So, what will determine the results of the Saints-Sinners race? **14**. Let's say there are ten churches, but only three bars, along the main street. **15**. Under these conditions, the Sinners will win the race. **16**. Right? **17**. Watch out! **18**. What if it takes longer to drink a beer than it does to say a prayer?

19. The point of the exercise is to illustrate the concept that the results of this particular race are determined by the amount of time the participants spend not racing, that is, drinking or praying as the case may be. **20**. The analogy to chromatographic retention times is obvious if somewhat colloquial. **21**. Unfortunately, the analogy between the chromatographic stationary phase and a church or bar is perhaps less exemplary.

22. A secondary effect is possible if not all the racers run at exactly the same speed, if some Saints pray longer than others, or if some Sinners have more than one beer. **23.** In this case, not all the Sinners will reach the finish line at the same time. **24**. It is even possible that some very fast Saints could reach the finish line (elute) before some of the more tipsy Sinners or vice versa. **25**. Thus, there would be a distribution of individuals within a group of townsfolk and possible overlap of Saints and Sinners at the finish line. **26**. In chromatographic terms, the distribution is known as dispersion (described by the universally dreaded van Deemter equation) and overlap results in poor resolution. **27**. Both effects lead to diminished results for a chromatographic separation. **28**. In the 4th of July race analogy, it is possible that all the townsfolk (Saints, Sinners, Agnostics, and Hypocrites alike) would finish the race at the same time. **29**. In my experience, this is the most probable outcome for most Southern towns, as well as most chromatographic experiments.

2. 4. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**psm**. allegory – tale				
3	**psm**. allegory – story	**psm**. tale – story			
4	**rs**. I – we+		**psm**. people – townsfolk		
5			**rs**. Southern – Southern **rs**. town – towns **rs**. race – race	**pc**. townsfolk – race (**racers**)	
6			**psm**. people – town folks **rs**. race – race	**rs**. Saints – Saints **rs**. Sinners – Sinners **rs**. folks – folks	**rs**. race – race **rs**. towns – town **rs**. churches – church **rs**. bars – bar
7			**psm**. Fourth – 4^{th} **rs**. July – July **rs**. race – race	**pc**. townsfolk – race (**racers**)	**rs**. race – race
8			**tr**. people – Saints / Agnostic-Teetotalers **rs**. race – race	**pc**. townsfolk – race (**racers**) **rs**. Saints – Saints **rs**. Agnostic-Teetotalers – Agnostic-Teetotalers	**rs**. race – race **rs**. churches – church
9		**rs**. students – students	**tr**. people – Agnostic-Teetotalers / Hypocrites **rs**. race – race	**pc**. townsfolk – race (**racers**) **rs**. Agnostic-Teetotalers – Agnostic-Teetotalers **rs**. Hypocrites – Hipocrites	**rs**. race – race
10			**tr**. people – Saints / Sinners	**rs**. Saints – Saints **rs**. Sinners – Sinners	
11					
12			**psm**. town – city **rs**. race – race	**pc**. townsfolk – race (**racers**)	**rs**. race – race **psm**. town – city
13			**tr**. people – Saints-Sinners **rs**. race – race	**pc**. townsfolk – race (**racers**) **rs**. Saints – Saints **rs**. Sinners – Sinners	**rs**. race – race
14					**rs**. main – main **rs**. street – street **rs**. churches – churches **rs**. bars – bars
15			**tr**. people – Sinners **rs**. race – race	**pc**. townsfolk – race (**racers**) **rs**. Sinners – Sinners	**rs**. race – race

	1	2	3	4	5
16					
17					
18					
19	**psp**. allegory – exercise **rs**. illustrate – illustrate	**psp**. tale – exercise	**psp**. people – participants **rs**. race – race	**psp**. towsfolk – participants	**rs**. race – race
20	**rs**. chromatographic – chromatographic				
21	**pc**. illustrate – exemplary (**illustrative**) **rs**. chromatographic – chromatographic				**rs**. churches – church **rs**. bars – bar
22			**tr**. people – Saints / Sinners **rc**. race – racers	**psp**. towsfolk – racers **rs**. Saints – Saints **rs**. Sinners – Sinners	**rc**. race – racers
23			**tr**. people – Sinners	**rs**. Sinners – Sinners	
24			**tr**. people – Saints / Sinners	**rs**. Saints – Saints **rs**. Sinners – Sinners	
25			**psm**. people – townsfolk	**rs**. towsfolk – towsfolk **rs**. Saints – Saints **rs**. Sinners – Sinners	**pc**. race – townsfolk (**racers**)
26	**rs**. chromatographic – chromatographic				
27	**rs**. chromatographic – chromatographic				
28			**psm**. people – townsfolk **psm**. Fourth – 4th **rs**. July – July **rs**. race – race	**rs**. towsfolk – towsfolk **rs**. Saints – Saints **rs**. Sinners – Sinners **rs**. Agnostic – Agnostics **rs**. Hypocrites – Hypocrites	**rs**. race – race
29	**rs**. I – my+ **rs**. chromatographic – chromatographic		**rs**. Southern – Southern **rs**. town – towns		**rs**. Southern – Southern **rs**. towns – towns

	6	7	8	9	10
7	**rs**. race – race				
8	**rs**. race – race **tr**. town folks – Agnostic-Teetotalers **rs**. run – running **rs**. Saints – Saints **rs**. church – church	**rs**. win – win **rs**. race – race			
9	**rs**. race – race **tr**. town folks – Agnostic-Teetotalers / Hypocrites	**rs**. win – win **rs**. race – race	**tr**. Saints – Hypocrites **rs**. win – win **rs**. race – race **rs**. Agnostic-Teetotalers – Agonostic-Teetotalers		
10	**rs**. Saints – Saints **rs**. Sinners – Sinners		**rs**. Saints – Saints **tr**. Agnostic-Teetotalers – Sinners	**tr**. Agnostic-Teetotalers / Hipocrites – Saints / Sinners	
11				**rs**. come – come	
12	**rs**. race – race **psm**. town – city	**rs**. race – race	**rs**. race – race	**rs**. race – race	
13	**rs**. race – race **rs**. Saints – Saints **rs**. Sinners – Sinners	**rs**. race – race	**rs**. Saints – Saints **rs**. race – race **tr**. Agnostic-Teetotalers – Sinners	**tr**. Agnostic-Teetotalers / Hipocrites – Saints / Sinners **rs**. race – race	**rs**. Saints – Saints **rs**. Sinners – Sinners
14	**rs**. church – churches **rs**. bar – bars		**rs**. church – churches		
15	**rs**. race – race **rs**. Sinners – Sinners	**rs**. win – win **rs**. race – race	**tr**. Saints / Agnostic-Teetotalers – Sinners **rs**. win – win **rs**. race – race	**tr**. Agnostic-Teetotalers / Hipocrites – Sinners **rs**. win – win **rs**. race – race	**rs**. Sinners – Sinners
16					
17					
18	**rc**. pray – prayer **rs**. beer – beer		**pc**. are in church – prayer **(praying)**		
19	**rs**. race – race **psp**. town folks – participants **psm**. run – racing **rs**. pray – praying	**rs**. race – race	**hip**. Saints / Agnostic-Teetotalers – participants **rs**. race – race **psm**. are in church – praying **psm**. running – racing	**hip**. Agnostic-Teetotalers / Hipocrites – participants **rs**. race – race	**hip**. Saints / Sinners – participants

	6	7	8	9	10
20					
21	**rs**. church – church **rs**. bar – bar		**rs**. church – church		
22	**rc**. race – racers **rs**. run – run **rs**. same – same **rs**. speed – speed **rs**. Saints – Saints **rs**. pray – pray **rs**. Sinners – Sinners **rs**. beer – beer	**rc**. race – racers	**rs**. Saints – Saints **rc**. race – racers **psm**. are in church – pray **tr**. Agnostic-Teetotalers – Sinners **rs**. running – run	**tr**. Agnostic-Teetotalers / Hypocrites – Saints / Sinners **rc**. race – racers	**rs**. Saints – Saints **rs**. Sinners – Sinners
23	**rs**. Sinners – Sinners		**tr**. Saints / Agnostic-Teetotalers – Sinners	**tr**. Agnostic-Teetotalers /Hypocrites – Sinners	**rs**. Sinners – Sinners
24	**rs**. Saints – Saints **rs**. Sinners – Sinners		**rs**. Saints – Saints **tr**. Agnostic-Teetotalers – Sinners	**tr**. Agnostic-Teetotalers / Hypocrites – Saints / Sinners	**rs**. Saints – Saints **rs**. Sinners – Sinners
25	**psm**. town folks – townfolk **rs**. Saints – Saints **rs**. Sinners – Sinners	**pc**. race – townsfolk (**racers**)	**rs**. Saints – Saints **pc**. race – townsfolk (**racers**) **tr**. Agnostic-Teetotalers – Sinners	**tr**. Agnostic-Teetotalers / Hypocrites – Saints Sinners **pc**. race – townsfolk (**racers**)	**rs**. Saints – Saints **rs**. Sinners – Sinners
26					
27					
28	**rs**. race – race **psm**. town folks – townfolk **rs**. Saints – Saints **rs**. Sinners – Sinners	**rs**. 4th – 4th **rs**. July – July **rs**. race – race	**rs**. Saints – Saints **rs**. race – race **rs**. Agnostic – Agnostics	**rs**. Agnostic – Agnostics **rs**. race – race **rs**. Hypocrites – Hypocrites	**rs**. Saints – Saints **rs**. Sinners – Sinners
29	**rs**. town – towns				

	11	12	13	14	15
12					
13		**psm**. outcome – results **rs**. race – race			
14					
15			**rs**. Sinneres – Sinners **rs**. race – race	**d**. oración 14 – these	
16					
17					
18					
19		**psm**. outcome – results **rs**. race – race	**rs**. determine – determined **rs**. results – results **hip**. Saints-Sinners – participants **rs**. race – race		**hip**. Sinners – participants **rs**. race – race
20					
21				**rs**. churches – church **rs**. bars – bar	
22		**rc**. race – racers	**rs**. Saints – Saints **rs**. Sinners – Sinners **rc**. race – racers		**rs**. Sinners – Sinners **rc**. race – racers
23			**rs**. Sinners – Sinners		**rs**. Sinners – Sinners
24			**rs**. Saints – Saints **rs**. Sinners – Sinners		**rs**. Sinners – Sinners
25		**pc**. race – townsfolk (**racers**)	**rs**. Saints – Saints **rs**. Sinners – Sinners **pc**. race – townsfolk (**racers**)		**rs**. Sinners – Sinners **pc**. race – townsfolk (**racers**)
26					
27		**psm**. outcome – results			
28		**rs**. race – race	**rs**. Saints – Saints **rs**. Sinners – Sinners **rs**. race – race		**rs**. Sinners – Sinners **rs**. race – race
29		**psm**. city - towns **rs**. outcome – outcome	**psm**. results – outcome		

	16	17	18	19	20
17					
18					
19			**rs**. drink – drinking **rc**. prayer – praying		
20					
21				**pc**. illustrate – exemplary (**illustrative**)	**rs**. analogy – analogy **rs**. chromatographic – chromatographic
22			**psm**. drink – have **rs**. beer – beer **rc**. prayer – pray	**rc**. race – racers **tr**. participants – Saints / Sinners **psm**. racing – run **psm**. drinking – have **rs**. praying – pray	
23				**tr**. participants – Sinners	
24				**tr**. participants – Saints / Sinners	
25				**psm**. participants – towsfolk	
26					**rs**. chromatographic – chromatographic
27					**rs**. chromatographic – chromatographic
28				**rs**. race – race **psm**. participants – towsfolk	
29					**rs**. chromatographic – chromatographic

	21	22	23	24
22				
23		**d**. oración 22 – this **rs**. Sinners – Sinners		
24		**rs**. Saints – Saints **rs**. Sinners – Sinners	**rs**. Sinners – Sinners **rs**. reach – reach **rs**. finish – finish **rs**. line – line	
25		**psm**. racers – towsfolk **rs**. Saints – Saints **rs**. Sinners – Sinners	**rs**. Sinners – Sinners **rs**. finish – finish **rs**. line – line	**rs**. Saints – Saints **rs**. finish – finish **rs**. line – line **rs**. Sinners – Sinners
26	**rs**. chromatographic – chromatographic			
27	**rs**. chromatographic – chromatographic			
28		**rc**. racers – race **rs**. Saints – Saints **rs**. Sinners – Sinners	**rs**. Sinners – Sinners **rc**. finish – finish **rs**. same – same **rs**. time – time	**rs**. Saints – Saints **rc**. finish – finish **rs**. Sinners – Sinners
29	**rs**. chromatographic – chromatographic			

	25	26	27	28
26	**rs**. distribution – distribution **rs**. overlap – overlap			
27		**rs**. chromatographic – chromatographic		
28	**rs**. townsfolk – townsfolk **rs**. Saints – Saints **rs**. Sinners – Sinners **rc**. finish – finish			
29		**rs**. chromatographic – chromatographic	**rs**. chromatographic – chromatographic	**d**. oración 28 – this **psm**. possible – probable

2. 4. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	1													
3	1	1												
4	0(1)	0	1											
5	0	0	3	1										
6	0	0	2	3	4									
7	0	0	3	1	1	1								
8	0	0	2	3	2	5	2							
9	0	1	2	3	1	2	2	4						
10	0	0	1	2	0	2	0	2	1					
11	0	0	0	0	0	0	0	0	1	0				
12	0	0	2	1	2	2	1	1	1	0	0			
13	0	0	2	3	1	3	1	3	2	2	0	2		
14	0	0	0	0	4	2	0	1	0	0	0	0	0	
15	0	0	2	2	1	2	2	3	3	1	0	0	2	1
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	2	0	1	0	0	0	0	0	0
19	2	1	2	1	1	4	1	4	2	1	0	2	4	0
20	1	0	0	0	0	0	0	0	0	0	0	0	0	0
21	2	0	0	0	2	2	0	1	0	0	0	0	0	2
22	0	0	2	3	1	8	1	5	2	2	0	1	3	0
23	0	0	1	1	0	1	0	1	1	1	0	0	1	0
24	0	0	1	2	0	2	0	2	1	2	0	0	2	0
25	0	0	1	3	1	3	1	3	2	2	0	1	3	0
26	1	0	0	0	0	0	0	0	0	0	0	0	0	0
27	1	0	0	0	0	0	0	0	0	0	0	1	0	0
28	0	0	4	5	1	4	3	3	3	2	0	1	3	0
29	1(2)	0	2	0	2	1	0	0	0	0	0	2	1	0

	15	16	17	18	19	20	21	22	23	24	25	26	27	28
16	0													
17	0	0												
18	0	0	0											
19	2	0	0	2										
20	0	0	0	0	0									
21	0	0	0	0	1	2								
22	2	0	0	3	5	0	0							
23	1	0	0	0	1	0	0	2						
24	1	0	0	0	1	0	0	2	4					
25	2	0	0	0	1	0	0	3	3	4				
26	0	0	0	0	0	1	1	0	0	0	2			
27	0	0	0	0	0	1	1	0	0	0	0	1		
28	2	0	0	0	2	0	0	3	4	3	4	0	0	
29	0	0	0	0	0	1	1	0	0	0	0	1	1	2

2. 4. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,0) [**0**]
2. (0,0) [**0**]
3. (0,3) [**3**]
4. (0,7) [**7**]
5. (1,2) [**3**]
6. (2,6) [**8**]
7. (1,1) [**2**]
8. (2,7) [**9**]
9. (2,2) [**4**]
10. (0,0) [**0**]
11. (0,0) [**0**]
12. (0,0) [**0**]
13. (3,4) [**7**]
14. (1,0) [**1**]
15. (2,0) [**2**]
16. (0,0) [**0**]
17. (0,0) [**0**]
18. (0,1) [**1**]
19. (3,1) [**4**]
20. (0,0) [**0**]
21. (0,0) [**0**]
22. (6,2) [**8**]
23. (0,3) [**3**]
24. (1,2) [**3**]
25. (7,1) [**8**]
26. (0,0) [**0**]
27. (0,0) [**0**]
28. (11,0) [**11**]
29. (0,-) [**0**]

2. 4. 4. Texto resultante tras eliminar las oraciones marginales.

3. In a small Southern town (it must be a Southern town or the story doesn't work), the people are planning a Fourth of July race from one end of town to the other.**4**. The townsfolk have the commonly observed characteristics that most of them are either Saints or Sinners; however, some of the folks are neither Saints nor Sinners (The Agnostic-Teetotalers) and others are both Saints and Sinners (we'11 call this group the Hypocrites). **5**. The race will be conducted along the main street of town, and, as in most Southern towns, the street is lined with a suitable collection of churches and bars.

6. During the race the town folks all run at the same speed, but the Saints cannot pass a church without entering to pray for a while, and the Sinners cannot possibly pass by a bar without pausing for a refreshing beer. **7**. The immediate question then is who will win the 4th of July race? **8**. Most people want the Saints to win the race, but this is not probable because, while they are in church, the Agnostic-Teetotalers are still running. **9**. It is fairly obvious, even to college students, that the Agnostic-Teetotalers will win the race, and, quite deservedly, the Hypocrites will come in last.

13. So, what will determine the results of the Saints-Sinners race? **14**. Let's say there are ten churches, but only three bars, along the main street. **15**. Under these conditions, the Sinners will win the race. **18**. What if it takes longer to drink a beer than it does to say a prayer?

19. The point of the exercise is to illustrate the concept that the results of this particular race are determined by the amount of time the participants spend not racing, that is, drinking or praying as the case may be.

22. A secondary effect is possible if not all the racers run at exactly the same speed, if some Saints pray longer than others, or if some Sinners have more than one beer. **23.** In this case, not all the Sinners will reach the finish line at the same time. **24**. It is even possible that some very fast Saints could reach the finish line (elute) before some of the more tipsy Sinners or vice versa. **25**. Thus, there would be a distribution of individuals within a group of townsfolk and possible overlap of Saints and Sinners at the finish line. **28**. In the 4th of July race analogy, it is possible that all the townsfolk (Saints, Sinners, Agnostics, and Hypocrites alike) would finish the race at the same time.

2. 5. Texto 5: *High flying polymer*.

1. A new type of fire-resistant polymer could improve your chances of survival in a plane crash, according to Phillip Westmoreland, professor of chemical engineering at the University of Massachusetts Amherst in the US.

2. Much of today's aircraft interiors are made of polymers because they are lightweight and versatile - they can be dyed different colours and formed into many shapes. **3**. They are used in seats, windows, wall panels, floor carpets, wiring, insulation, ‘just about everything except the metal chair supports', says Westmoreland.

4. When a plane crashes and catches fire, polymers decompose from the heat, releasing combustible gases, which in turn also catch fire. **5**. According to Westmoreland's co-researcher Richard Lyon, Federal Aviation Authority (FAA), programme manager for fire research and fire safety, 40 per cent of the fatalities that occur in impact survivable air accidents are a result of fire. **6**. Fire-resistant polymers are therefore an important target.

7. Westmoreland and his team focused on polyhydroxyamide (PHA) as a potential candidate for a fire – resistant polymer. **8**. The backbone structure of PHA meant that it could be a useful thermoplastic (softens on heating) for forming into films and fibres. **9**. Also at temperatures of ca 180 –200º C, PHA converts with very little mass loss to water and a different polymer, ie the rigid high – strength polybenzoxazole (PBO, 2), which decomposes only at very high temperatures (ca 600º C). **10**. 'PBO has the best non-flammability of any material we know of, but you just can't use the stuff', commented Westmoreland. **11**. PBO is too hard to form into useful products, such as fabrics or panels.

12. Researchers at the University of Massachusetts synthesised several structural variants of PHA, from the simplest form (R=H), to phosphate-containing R.-groups, to see which had the lowest flammability. **13**. At the same time, a team at the FAA developed a new microcalorimeter that could evaluate the polymers' ability to burn in milligram quantities, a method with advantages over conventional tests which involve much larger samples – eg 'taking an aircraft seat and setting fire to it'. **14**. The results revealed that all forms of PHA had low flammability, but the best polymer was the simplest - ie when R=H. **15**. In tests, this form of PHA gave passengers ca 10 times longer to get out of an aircraft than the best existing polymer.

2. 5. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. polymer – polymers **psm**. plane – aircraft				
3	**rs**. Westmoreland – Westmoreland	**s**. polymers – they			
4	**rs**. fire – fire **rs**. polymer – polymers **rs**. plane – plane **rc**. crash – crashes	**psm**. aircraft – plane **rs**. polymers – polymers			
5	**rs**. fire – fire **rc**. survival – survivable **psm**. crash – impact **rs**. Westmoreland – Westmoreland		**rs**. Westmoreland – Westmoreland	**rs**. fire – fire	
6	**rs**. fire – fire **rs**. resistant – resistant **rs**. polymer – polymers	**rs**. polymers – polymers		**rs**. fire – fire **rs**. polymers – polymers	**rs**. fire – fire
7	**rs**. fire – fire **rs**. resistant – resistant **rs**. polymer – polymer **rs**. Westmoreland – Westmoreland	**rs**. polymers – polymer	**rs**. Westmoreland – Westmoreland	**rs**. fire – fire **rs**. polymers – polymer	**rs**. Westmoreland – Westmoreland **rs**. fire – fire
8	**tr**. polymer – PHA	**tr**. polymer – PHA **rs**. formed – forming	**rc**. used – useful	**tr**. polymers – PHA **rc**. heat – heating	
9	**rs**. polymer – polymer	**rs**. polymers – polymer		**rs**. polymers – polymer **rs**. decompose – decomposes	
10	**tr**. polymer – PBO **rs**. Westmoreland – Westmoreland	**tr**. polymers – PBO	**rs**. used – use **psm**. says – commented **rs**. Westmoreland – Westmoreland	**tr**. polymers – PBO **pc**. combustible – flammability (**flammable**)	**rs**. Westmoreland – Westmoreland

	1	2	3	4	5
11	**tr**. polymer – PBO	**tr**. polymers– PBO **rs**. formed – form	**rc**. used – useful **rs**. panels – panels	**tr**. polymers – PBO	
12	**tr**. polymer – PHA **rs**. University – University **rs**. Massachusetts – Massachusetts	**tr**. polymers – PHA		**tr**. polymers – PHA **pc**. combustible – flammability (**flammable**)	
13	**rs**. fire – fire **rs**. polymer – polymers **psm**. plane – aircraft	**rs**. aircraft – aircraft **rs**. polymers – polymers	**rs**. seats – seat	**psm**. plane – aircraft **rs**. fire – fire **rs**. polymers– polymers	**rs**. FAA – FAA **rs**. fire – fire
14	**rs**. polymer – polymer	**rs**. polymers – polymer		**rs**. polymers – polymer **pc**. combustible – flammability (**flammable**)	
15	**psm**. type – form **rs**. polymer – polymer **psm**. plane – aircraft	**rs**. aircraft – aircraft **rs**. polymers – polymer		**psm**. plane – aircraft **rs**. polymers – polymer	

	6	7	8	9	10
7	**rs**. fire – fire **rs**. resistant – resistant **rs**. polymers – polymer				
8	**tr**. polymers – PHA	**rs**. PHA – PHA			
9	**rs**. polymers – polymer	**rs**. PHA – PHA **rs**. polymer – polymer	**rs**. PHA – PHA		
10	**tr**. polymers – PBO	**rs**. Westmoreland – Westmoreland **tr**. polymer – PBO	**tr**. PHA – PBO	**rs**. PBO – PBO	
11	**tr**. polymers – PBO	**tr**. polymer – PBO	**tr**. PHA – PBO	**rs**. PBO – PBO	**rs**. PBO – PBO
12	**tr**. polymers – PHA	**tr**. polymer – PHA	**rs**. PHA – PHA	**rs**. PHA – PHA	**tr**. PBO – PHA **rs**. has – had **rc**. non-flammability – flammability
13	**rs**. fire – fire **rs**. polymers – polymers	**rs**. team – team **rs**. fire – fire **rs**. polymer – polymers	**hip**. PHA – polymers	**rs**. polymer – polymers	**hip**. PBO – polymers
14	**rs**. polymers – polymer	**rs**. PHA – PHA **rs**. polymer – polymer	**rs**. PHA – PHA	**rs**. PHA – PHA **rs**. polymer – polymer	**hip**. PBO – polymer **rs**. has – had **rc**. non-flammability – flammability
15	**rs**. polymers – polymer	**rs**. PHA – PHA **rs**. polymer – polymer	**rs**. PHA – PHA	**rs**. PHA – PHA **rs**. polymer – polymer	**hip**. PBO – polymer

	11	12	13	14
12	**tr**. PBO – PHA			
13	**hip**. PBO – polymers	**hip**. PHA – polymers		
14	**hip**. PBO – polymer	**rs**. PHA – PHA **rs**. simplest – simplest **rs**. form – forms **rs**. R=H – R=H **rs**. had – had **rc**. lowest – low **rs**. flammability – flammability	**rs**. polymers – polymer	
15	**hip**. PBO – polymer	**rs**. PHA – PHA **rs**. form – form **pc**. see – tests (**test**)	**rs**. polymers – polymer **rs**. tests – tests **rs**. aircraft – aircraft	**rs**. forms – form **rs**. PHA – PHA **rs**. polymer – polymer

2. 5. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	2													
3	1	1												
4	4	2	0											
5	4	0	1	1										
6	3	1	0	2	1									
7	4	1	1	2	2	3								
8	1	2	1	2	0	1	1							
9	1	1	0	2	0	1	2	1						
10	2	1	3	2	1	1	2	1	1					
11	1	2	2	1	0	1	1	1	1	1				
12	3	1	0	2	0	1	1	1	1	3	1			
13	3	2	1	3	2	2	3	1	1	1	1	1		
14	1	1	0	2	0	1	2	1	2	3	1	7	1	
15	3	2	0	2	0	1	2	1	2	1	1	3	3	3

2. 5. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,7) [7]
2. (0,0) [0]
3. (0,1) [1]
4. (1,1) [2]
5. (1,0) [1]
6. (1,1) [2]
7. (2,1) [3]
8. (0,0) [0]
9. (0,0) [0]
10. (1,2) [3]
11. (0,0) [0]
12. (2,2) [4]
13. (3,1) [4]
14. (2,1) [3]
15. (4,-) [4]

2. 5. 4. Texto resultante tras eliminar las oraciones marginales.

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3. <~~They~~> [polymers] are used in seats, windows, wall panels, floor carpets, wiring, insulation, 'just about everything except the metal chair supports', says Westmoreland.

4. When a plane crashes and catches fire, polymers decompose from the heat, releasing combustible gases, which in turn also catch fire. **5**. According to Westmoreland's co-researcher Richard Lyon, Federal Aviation Authority (FAA), programme manager for fire research and fire safety, 40 per cent of the fatalities that occur in impact survivable air accidents are a result of fire. **6**. Fire-resistant polymers are therefore an important target.

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12. Researchers at the University of Massachusetts synthesised several structural variants of PHA, from the simplest form (R=H), to phosphate-containing R.-groups, to see which had the lowest flammability. **13**. At the same time, a team at the FAA developed a new microcalorimeter that could evaluate the polymers' ability to burn in milligram quantities, a method with advantages over conventional tests which involve much larger samples – eg 'taking an aircraft seat and setting fire to it'. **14**. The results revealed that all forms of PHA had low flammability, but the best polymer was the simplest - ie when R=H. **15**. In tests, this form of PHA gave passengers ca 10 times longer to get out of an aircraft than the best existing polymer.

2. 6. Texto 6: *Flash of inspiration wins Nobel prize for chemistry*.

1. Chemist Ahmed Zewail of the California Institute of Technology (Caltech) (pictured top right) was the recipient of the 1999 Nobel prize for chemistry for a flash of inspiration that is revolutionising our understanding of chemical reactions. **2**. Using brief bursts of light from lasers, he developed a way to take 'snapshots of individual molecules as they change during a chemical reaction.

3. Modern lasers can produce a very short burst of light, lasting a few femtoseconds ie a million-billionth of a second. **4**. Like a fast camera that freezes a dancer in motion, the laser beam can illuminate a molecule as it is transformed from one shape and structure to another during a chemical reaction – its transition state. **5**. This transition state, which exists between the reactant and the product, lasts for only femtoseconds, so observing it before it disappears was, until Zewail's experiments, almost impossible. **6**. Being able to observe this state is helping chemists to find out exactly how particular reactions work and allowing them to predict the outcome of other related reactions as well as the complex interactions of, for example, a drug molecule with a biological receptor.

7. The earliest attempt to look at reactions as they happen was by H. Hartridge and EJ. Roughton in the 1920s. **8**. They used a spectrophotometer to observe what happens when two compounds are mixed and saw chemical reactions taking place in a thousandth of a second. **9**. In the 1960s, Ronald Norrish and George Porter came up with the idea of using a flash-lamp to freeze the reactions – the shorter the flash, the more transient the reactions they could see. **10**. They observed chemistry on the millisecond and microsecond timescales – a thousand times shorter than that possible in the 1920s. **11**. Poter and Norrish shared the 1967 Nobel prize with the German chemist Manfred Eigen, who used heat and pressure shock methods to trigger a reaction and observe 'almost' the instant at which it was happening (Eigen was also working at the milli-to micro-second timescale).

12. During the early 1980s, Dudley Herschbach, Yuan Lee and John Polanyi had improved the ability to observe chemical reactions down to the picosecond scale using a vacuum collision experiments – for this work they received the 1986 Nobel prize for chemistry. **13**. With shorter and shorter timescales, chemists began to reveal the intermediate chemical species in reactions – not, the transition states, they were still too fleeting, but the structures either side that lasted just long enough for them to record. **14**. Once chemists had reached the picoscale, they only needed to take one step further to reach the femto timescale. **15**. The femtosecond – 10^{-15}s – represents the frequency at which molecules vibrate, without which there would be no interaction and no chemical change. **16**. If chemists could watch molecular vibrations they would have reached the limit of observation.

17. Zewail realised that to observe molecules at this level his flashlamp would have to be very fast, a pulsing laser that flashes once every femtosecond, he reasoned, would do the job. **18**. For their simplest experiment, Zewail and his colleagues chose a unimolecular reaction, ie where a single substance changes into another without the involvement of a second chemical, and formed a molecular beam in a vacuum chamber. **19**. By blasting this beam with a 'pump pulse' of laser light they excited the molecules and triggered a change. **20**. Then, by applying a weaker, 'probe pulse' from a laser lasting a few femtoseconds - at a frequency to coincide with the absorption frequency of the suspected transition state of the substance - Zewail and his team obtained a characteristic spectrum from the light emitted by the transition state. **21**. They had frozen the reaction.

22. The chemists compared the characteristic spectrum with the theoretical pattern obtained by using the methods of last year's Nobel chemists John Pople and Walter Kohn *(Educ. Chem.,* 1999, 36(1), 7) who provided them with the means to predict molecular structure and so their characteristic spectra. **23**. Zewail's first unimolecular reaction - the one that started the whole femtochemistry field - was the dissociation of iodine cyanide (ICN), which takes just 200 femtoseconds. **24**. His results were published in 1987 in the *journal of physical chemistry* and showed the transition state just as the carbon-iodine bond in the molecule is about to break to form the cyano radical and an iodine atom.

25. Zewail and his colleagues then moved on to bimolecular reactions, which involve two interacting chemical species. **26**. They studied the reaction of hydrogen with carbon dioxide, which produces carbon monoxide and hydroxy radicals. **27**. Zewail's flash revealed that the reaction passes through a transitionary HOCO molecule, which exists fleetingly for a mere picosecond (1000fs). **28**. His team also began to look at a puzzle that had occupied chemical minds for some time - ie would two seemingly identical bonds in a molecule break simultaneously in, for instance, a dissociation reaction. **29**. For the dissociation of tetrafluorodiiodoethane it turns out that the 'equivalent' C-1 bonds do not break at the same time - there is a delay of 200 fs following the splitting of the first.

30. Since Zewail's pioneering studies in the 1980s and 1990s, many other research teams have begun to use femtochemistry to look at diverse reactions - watching them happen in real-time.

2. 6. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**s**. Ahmed Zewail – he **rs**. chemical – chemical **rs**. reactions – reaction				
3		**psm**. brief – short **rs**. bursts – burst **rs**. light – light **rs**. lasers – lasers			
4	**rs**. chemical – chemical **rs**. reactions – reaction	**psp**. bursts – flash **rs**. lasers – laser **rs**. molecules – molecule **psm**. change – transformed **rs**. chemical – chemical **rs**. reaction – reaction	**rs**. lasers – laser **psp**. burst – flash		
5	**rs**. Zewail – Zewail **rc**. reactions – reactant	**psm**. take ‘snapshots’ – observing **rc**. reaction – reactant	**rs**. lasting – lasts* **rs**. femtoseconds – femtoseconds	**rc**. reaction – reactant **rs**. transition – transition **rs**. state – state	
6	**rs**. chemist – chemists **rs**. reactions – reactions	**psm**. take ‘snapshots’ – observe **rs**. molecules – molecule **rc**. chemical – chemists **rs**. reaction – reactions		**rs**. molecule – molecule **rc**. chemical – chemists **rs**. reaction – reactions **rs**. state – state	**rs**. state – state **rc**. reactant – reactions **rs**. observing – observe
7	**rs**. reactions – reactions	**psm**. take ‘snapshots’ – look at **rs**. reaction – reactions		**rs**. reaction – reactions	**rc**. reactant – reactions **psm**. observing – look at
8	**rs**. chemical – chemical **rs**. reactions – reactions	**rs**. using – used **psm**. take ‘snapshots’ – observe **rs**. chemical – chemical **rs**. reaction – reactions	**rs**. second – second*	**rs**. chemical – chemical **rs**. reaction – reactions	**rc**. reactant – reactions **rc**. femtoseconds – second **rs**. observing – observe
9	**psp**. inspiration – idea **rs**. reactions – reactions	**rs**. using – using **pc**. brief – shorter (**short**) **psm**. bursts – flah **psm**. take ‘snapshots’ – see **rs**. reaction – reactions	**rc**. short – shorter **psm**. burst – flash	**rs**. flash – flash **rs**. freezes – freeze **rs**. reaction – reactions **rc**. transition – transient	**rc**. transition – transient **rc**. reactant – reactions **psm**. observing – see
10	**rs**. chemistry – chemistry	**psm**. take ‘snaoshots’ – observed **rc**. chemical – chemistry	**rc**. second – millisecond*	**rc**. chemical – chemistry	**tr**. femtoseconds – millisecond **rs**. observing – observed

	1	2	3	4	5
11	**rs**. chemist – chemist **rs**. Nobel – Nobel **rs**. prize – prize **rs**. reactions – reaction	**rs**. using – used **psm**. way – methods **psm**. take 'snaoshots' – observe **rc**. chemical – chemist **rs**. reaction – reaction	**rc**. second – microsecond*	**rc**. chemical – chemist **rs**. reaction – reaction	**rc**. reactant – reaction **tr**. femtoseconds – microsecond **rs**. observing – observe
12	**pc**. recipient – received (**receiver**) **rs**. Nobel – Nobel **rs**. prize – prize **rs**. chemistry – chemistry **rs**. chemical – chemical **rs**. reactions – reactions	**rs**. using – using **psm**. take 'snapshots – observe **rs**. chemical – chemical **rs** reaction – reactions	**rc**. second – picosecond*	**rs**. chemical – chemical **rs**. reaction – reactions	**rc**. reactant – reactions **tr**. femtoseconds – picosecond **rs**. observing – observe **rs**. experiments – experiments
13	**rs**. chemist – chemists **rs**. chemical – chemical **rs**. reactions – reactions	**rs**. chemical – chemical **rs**. reaction – reactions	**rs**. lasting – lasted*	**rs**. structure – structures **rs**. chemical – chemical **rs**. reaction – reactions **rs**. transition – transition **rs**. state – states	**rs**. transition – transition **rs**. state – states **rc**. reactant – reactions **rs**. lasts – lasted
14	**rs**. chemist – chemists	**rc**. chemical – chemists		**rc**. chemical – chemists	
15	**rs**. chemical – chemical **psm**. reactions – change	**rs**. molecules – molecules **rs**. chemical – chemical **rc**. change – change	**rs**. femtoseconds – femtosecond	**rs**. molecule – molecules **rs**. chemical – chemical **psm**. reaction – change	**rs**. femtoseconds – femtosecond **pc**. reactant – change (**reaction**)
16	**rs**. chemist – chemists	**psm**. take 'snapshots' – watch **rc**. molecules – molecular **rc**. chemical – chemists		**rc**. molecule – molecular **rc**. chemical – chemists	**rc**. observing – observation
17	**rs**. Zewail – Zewail	**pc**. bursts – flashes (**flash**) **rs**. lasers – laser **rs**. he – he **psm**. take 'snapshots' – observe **rs**. molecules – molecules	**rs**. lasers – laser **pc**. burst – flashes (**flash**) **rs**. light – light	**rs**. fast – fast **rc**. flash – flashes **rs**. laser – laser **rs**. molecule – molecules	**rs**. femtoseconds – femtosecond **rs**. observing – observe **rs**. Zewail – Zewail

	1	2	3	4	5
18	**rs**. Zewail – Zewail **rc**. chemical – chemical **rs**. reactions – reaction	**rs**. he – his **rc**. molecules – molecular **rs**. change – changes **rc**. chemical – chemical **rs**. reaction – reaction		**rs**. beam – beam **rc**. molecule – molecular **psm**. transformed – changes **rc**. chemical – chemical **rs**. reaction – reaction	**rc**. reactant – reaction **rs**. Zewail – Zewail **rs**. experiments – experiment
19	**psm**. reactions – change	**pc**. bursts – blasting (**blast**) **rs**. light – light **rs**. lasers – laser **rs**. molecules – molecules **rc**. change – change	**rs**. lasers – laser **pc**. burst – blasting (**blast**) **rs**. light – light	**tr**. flash – blasting **rs**. laser – laser **rs**. beam – beam **rs**. molecule – molecules **psm**. reaction – change	**pc**. reactant – change (**reaction**)
20	**rs**. Zewail – Zewail	**rs**. light – light* **rs**. lasers – laser **rs**. he – his	**rs**. lasers – laser **rs**. light – light* **rs**. lasting – lasting **rs**. few – few **rs**. femtoseconds – femtoseconds	**rs**. laser – laser **rs**. transition – transition **rs**. state – state	**rs**. transition – transition **rs**. state – state **rs**. lasts – lasting* **rs**. femtoseconds – femtoseconds **rs**. Zewail – Zewail
21	**rs**. reactions – reaction	**rs**. reaction – reaction		**rs**. freezes – frozen **rs**. reaction – reaction	**rc**. reactant – reaction
22	**rs**. chemist – chemists **rs**. Nobel – Nobel **psm**. chemistry – chem.*	**rs**. using – using **psm**. way – methods **rc**. molecules – molecular **rc**. chemical – chemists		**rc**. molecule – molecular **rs**. structure – structure **rc**. chemical – chemists	
23	**rs**. Zewail – Zewail **rc**. chemistry – femtochemistry **rs**. reactions – reaction	**rc**. molecules – unimolecular **rc**. chemical – femtochemistry **rs**. reaction – reaction	**rs**. femtoseconds – femtoseconds	**rc**. molecule – unimolecular **rs**. reaction – reaction	**rc**. reactant – reaction **psm**. lasts – takes **rs**. femtoseconds – femtoseconds **rs**. Zewail – Zewail
24	**s**. Zewail – his **rs**. chemistry – chemistry*	**rs**. he – his **rs**. molecules – molecule **rc**. chemical – chemistry*		**rs**. molecule – molecule **rc**. chemical – chemistry* **rs**. transition – transition **rs**. state – state	**rs**. transition – transition **rs**. state – state **s**. Zewail – his

	1	2	3	4	5
25	**rs**. Zewail – Zewail **rs**. chemical – chemical **rs**. reactions – reactions	**rs**. he – his **rc**. molecules – bimolecular **rs**. chemical – chemical **rs**. reaction – reactions		**rc**. molecule – bimolecular **rs**. chemical – chemical **rs**. reaction – reactions	**rc**. reactant – reactions **rs**. Zewail – Zewail
26	**rs**. reactions – reaction	**psp**. take ‘snapshots’ – studied **rs**. reaction – reaction		**rs**. reaction – reaction	**rc**. reactant – reaction **psm**. observing – studied
27	**rs**. Zewail – Zewail **rs**. reactions – reaction	**psp**. bursts – flash **rs**. molecules – molecule **rs**. reaction – reaction	**psp**. bursts – flash **psm**. femtoseconds – fs	**rs**. flash – flash **rs**. molecule – molecule **rs**. reaction – reaction **rc**. transition – transitionary	**rc**. transition – transitionary **rs**. exists – exists **rc**. reactant – reaction **tr**. femtoseconds – picosecond **rs**. Zewail – Zewail
28	**rc**. chemist – chemical **s**. Zewail – his **rs**. reactions – reaction	**rs**. he – his **psm**. take ‘snapshots’ – look at **rs**. molecules – molecule **rs**. chemical – chemical **rs**. reaction – reaction		**rs**. molecule – molecule **rs**. chemical – chemical **rs**. reaction – reaction	**rc**. reactant – reaction **psm**. observing – look at **s**. Zewail – his
29			**psm**. femtoseconds – fs		**psm**. femtoseconds – fs
30	**rs**. Zewail – Zewail **rc**. chemistry – femtochemistry **rs**. reactions – reactions	**rs**. using – use **psm**. take ‘snapshots’ – look at **rc**. chemical – femtochemistry **rs**. reaction – reactions		**rc**. chemical – femtochemistry **rs**. reaction – reactions	**rc**. reactant – reaction **psm**. observing – watching **rs**. Zewail – Zewail **psm**. experiments – studies

	6	7	8	9	10
7	**psm**. observe – look at **rs**. reactions – reactions				
8	**rs**. observe – observe **rc**. chemists – chemical **rs**. reactions – reactions	**psm**. look at – observe **rs**. reactions – reactions **rs**. happen – happens **s**. H. Hartridge and EJ. Roughton – they			
9	**psp**. being able – could **psm**. observe – see **rs**. reactions – reactions	**psm**. look at – see **rs**. reactions – reactions	**rs**. used – using **rs**. saw – see **rs**. reactions – reactions		
10	**rs**. observe – observed **rc**. chemists – chemistry	**psm**. look at – observed **rs**. 1920s – 1920s	**rs**. observe – observed **rc**. chemical – chemistry **rc**. second – millisecond	**rs**. they – they **psm**. see – observed	
11	**rs**. observe – observe **rs**. chemists – chemist **rs**. reactions – reaction	**psm**. look at – observe **rs**. reactions – reaction **rs**. happen – happening	**rs**. used – used **rs**. observe – observe **rs**. happens – happening **rc**. chemical – chemist **rs**. reactions – reaction **rc**. second – microsecond	**rs**. Norrish – Norrish **rs**. Porter – Porter **rs**. using – used **rs**. reactions – reaction **psm**. see – observe	**rs**. observed – observe **rc**. chemistry – chemist **rc**. millisecond – milli **rs**. microsecond – microsecond **rs**. timescales – timescale
12	**rc**. able – ability **rs**. observe – observe **rc**. chemists – chemistry **rs**. reactions – reactions	**psm**. look at – observe **rs**. reactions – reactions	**rs**. used – using **rs**. observe – observe **rs**. chemical – chemical **rs**. reactions – reactions **rc**. second – picosecond	**rs**. using – using **rs**. reactions – reactions **psm**. see – observe	**rs**. observed – observe **rs**. chemistry – chemistry **tr**. microsecond – picosecond **rc**. timescales – scale
13	**rs**. state – states **rs**. chemists – chemists **rs**. reactions – reactions	**rs**. reactions – reactions	**rs**. chemical – chemical **rs**. reactions – reactions	**rc**. transient – transition **rs**. reactions – reactions	**rc**. chemistry – chemists **rs**. timescales – timescales **rs**. shorter – shorter
14	**rs**. chemists – chemists		**rc**. chemical – chemists		**rc**. chemistry – chemists **rs**. timescales – timescale

	6	7	8	9	10
15	**rc**. chemists – chemical **psm**. reactions – change **rs**. interactions – interaction **rs**. molecule – molecules	**psm**. reactions – change	**rs**. chemical – chemical **psm**. reactions – change **rc**. second – femtosecond	**psm**. reactions – change	**rc**. chemistry – chemical **tr**. microsecond – femtosecond
16	**psp**. being able – could **rc**. observe – observation **rs**. chemists – chemists **rc**. molecules - molecular	**psm**. look at – watch	**rc**. observe – observation **rc**. chemical – chemists	**psm**. see – watch	**rc**. observed – observation **rc**. chemistry – chemists
17	**rs**. observe – observe **rs**. molecule – molecules	**psm**. look at – observe	**rs**. observe – observe **rc**. second – femtosecond	**psm**. see – observe **rs**. flashlamp – flashlamp **rc**. flash – flashes	**rs**. observed – observe **tr**. microsecond – femtosecond
18	**rc**. chemists – chemical **rs**. reactions – reaction **rc**. molecule – molecular	**rs**. reactions – reaction	**rc**. chemical – chemical **rs**. reactions – reaction	**rs**. reactions – reaction	**rc**. chemistry – chemical
19	**psm**. reactions – change **rs**. molecule – molecules	**psm**. reactions – change	**psm**. reactions – change	**psm**. reactions – change **tr**. flash – blasting	
20	**rs**. state – state		**rc**. second – femtoseconds	**rc**. trasient – transition	**tr**. microsecond – femtoseconds
21	**rs**. reactions – reaction	**rs**. reactions – reaction	**rs**. reactions – reaction	**rs**. freeze – frozen **rs**. reactions – reaction	
22	**rs**. chemists – chemists **rs**. predict – predict **rc**. molecule – molecular		**rs**. used – using **rc**. chemical – chemists	**rs**. using – using	**rc**. chemistry – chemists
23	**rc**. chemists – femtochemistry **rs**. reactions – reaction **rc**. molecule – unimolecular	**rs**. reactions – reaction	**rs**. reactions – reaction **rc**. second – femtoseconds	**rs**. reactions – reaction	**tr**. microsecond – femtoseconds

	6	7	8	9	10
24	**rs**. state – state **rc**. chemists – chemistry* **rs**. molecule – molecule		**rc**. chemical – chemistry*	**rc**. transient – transition	**rs**. chemistry– chemistry*
25	**rc**. chemists – chemical **rs**. reactions – reactions **rc**. molecule – bimolecular	**rs**. reactions – reactions	**rs**. chemical – chemical **rs**. reactions – reactions	**rs**. reactions – reactions	**rc**. chemistry – chemical
26	**psp**. observe – studied **rs**. reactions – reaction	**psp**. look at – studied **rs**. reactions – reaction	**psp**. observe – studied **rs**. reactions – reaction	**rs**. reactions – reaction **psp**. see – studied	**psp**. observed – studied
27	**rs**. reactions – reaction **rs**. molecule – molecule	**rs**. reactions – reaction	**rs**. reactions – reaction **rc**. second – picosecond	**rs**. reactions – reaction **rs**. flash – flash **rc**. transient – trasitionary	**tr**. microsecond – picosecond
28	**psm**. observe – look at **rc**. chemists – chemical **rs**. reactions – reaction **rs**. molecule – molecule	**rs**. look at – look at **rs**. reactions – reaction	**psm**. observe – look at **tr**. chemical – chemical **rs**. reactions – reaction	**rs**. reactions – reaction **psm**. see – look at	**psm**. observed – look at **rc**. chemistry – chemical
29			**pc**. second – fs (**femtosecond**)		**pc**. second – fs (**femtosecond**)
30	**psm**. observe – watching **rc**. chemists – femtochemistry **rs**. reactions – reactions	**rs**. look at – look at **rs**. reactions – reactions **rs**. happen – happen	**psm**. observe – look at **rs**. happen – happen **rc**. chemical – femtochemistry **rs**. reactions – reactions	**rs**. using – use **rs**. reactions – reactions **psm**. see – look at	**psm**. observed – look at **rc**. chemistry – femtochemistry

	11	12	13	14	15
12	**rs**. Nobel – Nobel **rs**. prize – prize **rc**. chemist – chemistry **rs**. used – using **rs**. reaction – reactions **rs**. observe – observe **rc**. working – work **tr**. micro-second – picosecond **rc**. timescale - scale				
13	**rs**. chemist – chemists **rs**. reaction – reactions **pc**. instant – fleeting (**instantaneous**) **rs**. timescale – timescales	**rs**. chemical – chemical **rs**. reactions – reactions **rc**. scale – timescales **rc**. chemistry – chemists			
14	**rs**. chemist – chemists **rs**. timescale – timescale	**rc**. scale – picoscale **rc**. chemistry – chemists	**rs**. timescales – timescale **rs**. chemists – chemists		
15	**rc**. chemist – chemical **psm**. reaction – change **tr**. microsecond – femtosecond	**rs**. chemical – chemical **psm**. reactions – change **tr**. picosecond – femtosecond	**rs**. chemical – chemical **psm**. reactions – change	**rc**. chemists – chemical	
16	**rs**. chemist – chemists **rc**. observe – observation	**rc**. observe – observation **rc**. chemistry – chemists	**rs**. chemists – chemists	**rs**. chemists chemists **rs**. reach – reached	**rc**. molecules – molecular **rc**. vibrate – vibrations **rc**. chemical – chemists
17	**rs**. observe – observe **tr**. microsecond – femtosecond	**rs**. observe – observe **tr**. picosecond – femtosecond			**rs**. femtosecond – femtosecond **rs**. molecules – molecules
18	**rc**. chemist – chemical **rs**. reaction – reaction	**rc**. chemical – chemical **rs**. reactions – reaction **rs**. vacuum – vacuum **rs**. experiments – experiment	**rc**. chemical – chemical **rs**. reactions – reaction	**rc**. chemists – chemical	**rc**. molecules – unimolecular **rc**. chemical – chemical **psm**. change – reaction
19	**rs**. trigger – triggered **psm**. reaction – change	**psm**. reaction – change	**psm**. reactions – change		**rs**. molecules – molecules **rs**. change – change

	11	12	13	14	15
20	**tr**. microsecond – femtoseconds	**tr**. picosecond – femtoseconds	**rs**. transition – transition **rs**. states – state		**rs**. femtosecond – femtoseconds **rs**. frecuency – frecuency
21	**rs**. reaction – reaction	**rs**. reactions – reaction	**rs**. reactions – reaction		**psm**. change – reaction
22	**rs**. Nobel – Nobel **rs**. chemist – chemists **rs**. used – using **rs**. methods – methods	**rs**. using – using **rs**. Nobel – Nobel **rc**. chemistry – chemists	**rs**. chemists – chemists	**rs**. chemists – chemists	**rc**. molecules – molecular **rc**. chemical – chemists
23	**rc**. chemist – femtochemistry **rs**. reaction – reaction **tr**. microsecond – femtoseconds	**rs**. reactions – reaction **tr**. picosecond – femtoseconds **rc**. chemistry – femtochemistry	**rc**. chemists – femtochemistry **rs**. reactions – reaction **psm**. lasted – takes	**rc**. chemists – femtochemistry	**rs**. femtosecond – femtoseconds **rc**. molecules – unimolecular **psm**. change – reaction
24	**rc**. chemist – chemistry*	**rs**. chemistry – chemistry*	**rs**. chemists – chemistry* **psm**. reveal – showed **rs**. transition – transition **rs**. states – state	**rc**. chemists – chemistry*	**rs**. molecules – molecule **rc**. chemical – chemistry*
25	**rc**. chemist – chemical **rs**. reaction – reactions	**rc** chemical – chemical **rs**. reactions – reactions	**rs**. chemical – chemical **rs**. species – species **rs**. reactions – reactions	**rc** chemists – chemical	**rc**. molecules – bimolecular **rc**. interaction – interacting **rs**. chemical – chemical **psm**. change – reactions
26	**rs**. reaction – reaction **psp**. observe – studied	**psp**. observe – studied **rs**. reactions – reaction	**rs**. reactions – reaction		**psm**. change – reaction
27	**rs**. reaction – reaction **pc**. instant – fleetingly **(instantaneously)** **tr**. microsecond – picosecond	**rs**. reactions – reaction **rs**. picosecond – picosecond	**rs**. reveal – revealed **rs**. reactions – reaction **rc**. transition – transitionary **rc**. fleeting – fleetingly **psm**. lasted – exists		**tr**. femtosecond – picosecond **rs**. molecules – molecule **psm**. change – reaction

	11	12	13	14	15
28	**rc**. chemist – chemical **rs**. reaction – reaction **psm**. observe – look at	**psm**. observe – look at **rs**. reactions – reaction **rc**. chemistry – chemical	**rc**. chemists – chemical **rs**. began – began **rs**. reactions – reaction	**rc** chemists – chemical	**rs**. molecules – molecule **tr**. chemical – chemical **psm**. change – reaction
29	**tr**. microsecond – fs (**femtosecond**)	**tr**. picosecond – fs (**femtosecond**)			**psm**. femtosecond – fs
30	**rc**. chemist – femtochemistry **rs**. used – use **rs**. reaction – reactions **psm**. observe – look at **rs**. happening – happen	**psm**. observe – look at **rs**. reactions – reactions **rs**. using – use **rc**. chemistry – femtochemistry	**rc**. chemists – femtochemistry **rs**. began – begun **rs**. reactions – reactions	**rc**. chemists – femtochemistry	**rc**. chemical – femtochemistry **psm**. change – reactions

	16	17	18	19	20
17	**rc**. molecular – molecules **d**. watch molecular vibrations – this **rc**. observation – observe				
18	**rc**. chemists – chemical **rc**. molecular – unimolecular	**rs**. Zewail – Zewail **rc**. molecules – unimolecular			
19	**rc**. molecular – molecules	**rs**. molecules – molecules **rc**. pulsing – pulse **rs**. laser – laser **tr**. flashes – blasting	**s**. Zewail and his colleages – they **rc**. changes – change **rc**. molecular – molecules **rs**. beam – beam		
20		**rs**. Zewail – Zewail **rc**. pulsing – pulse **rs**. laser – laser **rs**. femtosecond – femtoseconds	**rs**. Zewail – Zewail **rs**. his – his **psm**. colleagues – team **rs**. substance – substance	**rs**. pulse – pulse **rs**. laser – laser **rs**. light – light*	
21			**s**. Zewail and his colleagues – they **rs**. reaction – reaction	**rs**. they – they **psm**. change – reaction	
22	**rs**. chemists – chemists **rs**. molecular – molecular	**rc**. molecules – molecular	**co-ref**. Zewail and his colleagues – chemists **rc**. chemical – chemists **rs**. molecular – molecular	**rs**. they – them **rc**. molecules – molecular	**co-ref**. Zewail and his colleagues – chemists **rs**. obtained – obtained **rs**. characteristic – characteristic **rs**. spectrum – spectrum
23	**rc**. chemists – femtochemistry **rc**. molecular – unimolecular	**rs**. Zewail – Zewail **rc**. molecules – unimolecular **rs**. femtosecond – femtoseconds	**rs**. Zewail – Zewail **rs**. unimolecular – unimolecular **rs**. reaction – reaction **rc**. chemical – femtochemistry	**rc**. molecules – unimolecular **psm**. change – reaction	**psm**. lasting – takes* **rs**. femtoseconds – femtoseconds **rs**. Zewail – Zewail
24	**rc**. chemists – chemistry* **rc**. molecular – molecule	**s**. Zewail – his **rs**. molecules – molecule	**s**. Zewail – his **rc**. chemical – chemistry* **rc**. molecular – molecule	**rs**. molecules – molecule	**s**. Zewaqil – his **rs**. transition – transition **rs**. state – state

	16	17	18	19	20
25	**rc**. chemists – chemical **rc**. molecular – bimolecular	**rs**. Zewail – Zewail **rc**. molecules – bimolecular	**rs**. Zewail – Zewail **rs**. his – his **rs**. colleagues – colleagues **rc**. unimolecular – bimolecular **rs**. reaction – reactions **rc**. involvement – involve **rc**. chemical – chemical	**rc**. molecules – bimolecular **psm**. change – reactions	**rs**. Zewail – Zewail **rs**. his – his **psm**. team – colleagues
26	**psp**. watch – studied	**psp**. observe – studied	**s**. Zewail and his colleagues – they **rs**. reaction – reaction	**rs**. they – they **psm**. change – reaction	**s**. Zewail and his team – they
27	**rc**. molecular – molecule	**rs**. Zewail – Zewail **rs**. molecules – molecule **rc**. flashes – flash	**rs**. Zewail – Zewail **rs**. reaction – reaction **rc**. unimolecular – molecule	**tr**. blasting – flash **rs**. molecules – molecule **psm**. change – reaction	**psm**. lasting – exits* **psm**. femtoseconds – fs **rs**. Zewail – Zewail **rc**. transition – transitionary
28	**rc**. chemists – chemical **psm**. watch – look at **rc**. molecular – molecule	**s**. Zewail – his **psm**. observe – look at **rs**. molecules – molecule	**s**. Zewail – his **psm**. colleagues – team **rc**. unimolecular – molecule **rs**. reaction – reaction **tr**. chemical – chemical	**rs**. molecules – molecule **psm**. change – reaction	**tr**. substance – molecule **rs**. his – his **rs**. team – team
29		**psm**. femtosecond – fs			**psm**. femtoseconds – fs
30	**rc**. chemists – femtochemistry **rs**. watch – watching **pc**. observation – look at (**observe**)	**rs**. Zewail – Zewail **psm**. observe – look at	**rs**. Zewail – Zewail **psm**. colleagues – teams **rs**. reaction – reactions **rc**. chemical – femtochemistry	**psm**. change – reactions	**rs**. Zewail – Zewail **rs**. team – teams

	21	22	23	24	25
22	**rs**. they – them				
23	**rs**. reaction – reaction	**rc**. chemists – femtochemistry **rc**. molecular – unimolecular			
24		**psm**. chem. – chemistry **rc**. molecular – molecule	**s**. Zewail – his **rc**. unimolecular – molecule **rc**. femtochemistry – chemistry* **rs**. iodine – iodine **rc**. cyanide – cyano		
25	**rs**. reaction – reactions	**rc**. molecular – bimolecular	**rs**. Zewail – Zewail **rc**. unimolecular – bimolecular **rs**. reaction – reactions	**rc**. chemistry – chemical* **rc**. molecule – bimolecular	
26	**rs**. they – they **rs**. reaction – reactions	**rs**. them – they	**rs**. reaction – reaction	**rs**. radical – radicals	**rs**. reactions – reaction
27	**rs**. reaction – reaction	**rc**. molecular – molecule	**rs**. Zewail – Zewail **rc**. unimolecular – molecule **rs**. reaction – reaction **psm**. femtoseconds – fs	**psm**. showed – revealed **rc**. transition – transitionary **rs**. molecule – molecule	**rs**. Zewail – Zewail **rc**. bimolecular – molecule **rs**. reactions – reaction
28	**rs**. reaction – reaction	**rc**. chemists – chemical **rc**. molecular – molecule	**s**. Zewail – his **rc**. unimolecular – molecule **rs**. reaction – reaction **rs**. dissociation – dissociation	**rs**. his – his **rc**. chemistry – chemical* **rs**. bond – bonds **rs**. molecule – molecule **rs**. break – break	**rs**. his – his **psm**. colleagues – team **rc**. bimolecular – molecule **rs**. reactions – reaction **tr**. chemical – chemical
29			**rs**. dissociation – dissociation **rs**. 200 – 200 **psm**. femtoseconds– fs	**rs**. bond – bonds **rs**. break – break	
30	**rs**. reaction – reactions	**rs**. using – use **rc**. chemists – femtochemistry	**rs**. Zewail – Zewail **rs**. reaction – reactions **rs**. femtochemistry – femtochemistry	**rc**. chemistry – femtochemistry*	**rs**. Zewail – Zewail **psm**. colleagues – teams **rs**. reactions – reactions **rc**. chemical – femtochemistry

	26	27	28	29
27	**rs**. reaction – reaction			
28	**psp**. studied – look at **rs**. reaction – reaction	**s**. Zewail's – his **rs**. reaction – reaction **rs**. molecule – molecule		
29		**rs**. fs – fs	**rs**. bonds – bonds **rs**. break – break **psm**. simultaneously – at the same time **rs**. dissociation – dissociation	
30	**rc**. studied – studies **rs**. reaction – reactions	**rs**. Zewial – Zewail **rs**. reaction – reactions	**rs**. team – teams **rs**. began – begun **rs**. look at – look at **rc**. chemical – femtochemistry **rs**. reaction – reactions	

2. 6. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
2	3													
3	0	4												
4	2	6	2											
5	2	2	1(2)	3										
6	2	4	0	4	3									
7	1	2	0	1	2	2								
8	2	4	0(1)	2	3	3	4							
9	2	5	2	4	3	3	2	3						
10	1	2	0(1)	1	2	2	2	3	2					
11	4	5	0(1)	2	3	3	3	6	5	5				
12	6	4	0(1)	2	4	4	2	5	3	4	9			
13	3	2	0(1)	5	4	3	1	2	2	3	4	4		
14	1	1	0	1	0	1	0	1	0	2	2	2	2	
15	2	3	1	3	2	4	1	3	1	2	3	3	2	1
16	1	3	0	2	1	4	1	2	1	2	2	2	1	2
17	1	5	3	4	3	2	1	2	3	2	2	2	0	0
18	3	5	0	5	3	3	1	2	1	1	2	4	2	1
19	1	5	3	5	1	2	1	1	2	0	2	1	1	0
20	1	2(3)	4(5)	3	4(5)	1	0	1	1	1	1	1	2	0
21	1	1	0	2	1	1	1	1	2	0	1	1	1	0
22	2(3)	4	0	3	0	3	0	2	1	1	4	3	1	1
23	3	3	1	2	4	3	1	2	1	1	3	3	3	1
24	1(2)	2(3)	0	3(4)	3	2(3)	0	0(1)	1	0(1)	0(1)	0(1)	3(4)	0(1)
25	3	4	0	3	2	3	1	2	1	1	2	2	3	1
26	1	2	0	1	2	2	2	2	2	1	2	2	1	0
27	2	3	2	4	5	2	1	2	3	1	3	2	5	0
28	3	5	0	3	3	4	2	3	2	2	3	3	3	1
29	0	0	1	0	1	0	0	1	0	1	1	1	0	0

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
30	3	4	0	2	4	3	3	4	3	2	5	4	3	1

	15	16	17	18	19	20	21	22	23	24	25	26	27	28
16	3													
17	2	3												
18	3	2	2											
19	2	1	4	4										
20	2	0	4	4	2(3)									
21	1	0	0	2	2	0								
22	2	2	1	3	2	4	1							
23	3	2	3	4	2	2(3)	1	2						
24	1(2)	1(2)	2	2(3)	1	3	0	2	4(5)					
25	4	2	2	7	2	3	1	1	3	1(2)				
26	1	1	1	2	2	1	2	1	1	1	1			
27	3	1	3	3	3	3(4)	1	1	4	3	3	1		
28	3	3	3	5	2	3	1	2	4	4(5)	5	2	3	
29	1	0	1	0	0	1	0	0	3	2	0	0	1	4
30	2	3	2	4	1	2	1	2	3	0(1)	4	2	2	5

	29
30	0

2. 6. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,9) (-,10) [**9**] [**10**]	**2**. (1,18) (1,20) [**19**] [**21**]	**3**. (1,3) [**4**]
4. (1,14) [**15**]	**5**. (1,14) [**15**]	**6**. (3,13) (3,14)[**16**] [**17**]
7. (0,3) [**3**]	**8**. (4,7) [**11**]	**9**. (5,5) [**10**]
10. (1,3) [**4**]	**11**. (8,8) [**16**]	**12**. (8,7) [**15**]
13. (7,6) [**13**]	**14**. (0,0) [**0**]	**15**. (6,6) [**12**]
16. (3,3) [**6**]	**17**. (6,5) [**11**]	**18**. (7,8) (7,9) [**15**] [**16**]
19. (5,1) (5,2) [**6**] [**7**]	**20**. (5,5) (7,6) [**10**] [**13**]	**21**. (0,0) [**0**]
22. (7,0) (8,0) [**7**] [**8**]	**23**. (10,6) (11,6) [**16**] [**17**]	**24**. (5,2) (8,2)[**7**] [**10**]
25. (9,3) [**12**]	**26**. (0,0) [**0**]	**27**. (14,1) [**15**]
28. (18,2) [**20**]	**29**. (2,0) [**2**]	**30**. (15,-) [**15**]

2. 6. 4. Texto resultante tras eliminar las oraciones marginales.

1. Chemist Ahmed Zewail of the California Institute of Technology (Caltech) (pictured top right) was the recipient of the 1999 Nobel prize for chemistry for a flash of inspiration that is revolutionising our understanding of chemical reactions. **2**. Using brief bursts of light from lasers, he developed a way to take ‘snapshots of individual molecules as they change during a chemical reaction.

3. Modern lasers can produce a very short burst of light, lasting a few femtoseconds ie a million-billionth of a second. **4**. Like a fast camera that freezes a dancer in motion, the laser beam can illuminate a molecule as it is transformed from one shape and structure to another during a chemical reaction – its transition state. **5**. This transition state, which exists between the reactant and the product, lasts for only femtoseconds, so observing it before it disappears was, until Zewail’s experiments, almost impossible. **6**. Being able to observe this state is helping chemists to find out exactly how particular reactions work and allowing them to predict the outcome of other related reactions as well as the complex interactions of, for example, a drug molecule with a biological receptor.

7. The earliest attempt to look at reactions as they happen was by H. Hartridge and EJ. Roughton in the 1920s. **8**. They used a spectrophotometer to observe what happens when two compounds are mixed and saw chemical reactions taking place in a thousandth of a second. **9**. In the 1960s, Ronald Norrish and George Porter came up with the idea of using a flash-lamp to freeze the reactions – the shorter the flash, the more transient the reactions they could see. **10**. They observed chemistry on the millisecond and microsecond timescales – a thousand times shorter than that possible in the 1920s. **11**. Poter and Norrish shared the 1967 Nobel prize with the German chemist Manfred Eigen, who used heat and pressure shock methods to trigger a reaction and observe ‘almost’ the instant at which it was happening (Eigen was also working at the milli-to micro-second timescale).

12. During the early 1980s, Dudley Herschbach, Yuan Lee and John Polanyi had improved the ability to observe chemical reactions down to the picosecond scale using a vacuum collision experiments – for this work they received the 1986 Nobel prize for chemistry. **13**. With shorter and shorter timescales, chemists began to reveal the intermediate chemical species in reactions – not, the transition states, they were still too fleeting, but the structures either side that lasted just long enough for them to record. **15**. The femtosecond – 10^{-15}s – represents the frequency at which molecules vibrate, without which there would be no interaction and no chemical change. **16**. If chemists could watch molecular vibrations they would have reached the limit of observation.

17. Zewail realised that to observe molecules at this level his flashlamp would have to be very fast, a pulsing laser that flashes once every femtosecond, he reasoned, would do the job. **18**. For their simplest experiment, Zewail and his colleagues chose a unimolecular reaction, ie where a single substance changes into another without the involvement of a second chemical, and formed a molecular beam in a vacuum chamber. **19**. By blasting this beam with a 'pump pulse' of laser light they excited the molecules and triggered a change. **20**. Then, by applying a weaker, 'probe pulse' from a laser lasting a few femtoseconds - at a frequency to coincide with the absorption frequency of the suspected transition state of the substance - Zewail and his team obtained a characteristic spectrum from the light emitted by the transition state.

22. The chemists compared the characteristic spectrum with the theoretical pattern obtained by using the methods of last year's Nobel chemists John Pople and Walter Kohn *(Educ. Chem.,* 1999, 36(1), 7) who provided them with the means to predict molecular structure and so their characteristic spectra. **23**. Zewail's first unimolecular reaction - the one that started the whole femtochemistry field - was the dissociation of iodine cyanide (ICN), which takes just 200 femtoseconds. **24**. His results were published in 1987 in the *journal of physical chemistry* and showed the transition state just as the carbon-iodine bond in the molecule is about to break to form the cyano radical and an iodine atom.

25. Zewail and his colleagues then moved on to bimolecular reactions, which involve two interacting chemical species. **27**. Zewail's flash revealed that the reaction [of hydrogen with carbon dioxide, which produces carbon monoxide and hydroxy radicals] passes through a transitionary HOCO molecule, which exists fleetingly for a mere picosecond (1000fs). **28**. His team also began to look at a puzzle that had occupied chemical minds for some time - ie would two seemingly identical bonds in a molecule break simultaneously in, for instance, a dissociation reaction. **29**. For the dissociation of tetrafluorodiiodoethane it turns out that the 'equivalent' C-1 bonds do not break at the same time - there is a delay of 200 fs following the splitting of the first.

30. Since Zewail's pioneering studies in the 1980s and 1990s, many other research teams have begun to use femtochemistry to look at diverse reactions - watching them happen in real-time.

2. 7. Texto 7: *Pressure to change solvents.*

1. Decent decaffeinated coffee has been around since 1960s, when chemist Kurt Zosel found an alternative to using the toxic and unpleasant tasting benzene to extract the caffeine. **2**. He discovered that a l9th century chemical curiosity, known as a supercritical fluid (SCF), could dissolve out the caffeine but leave no solvent residue. **3**. Supercritical fluids while still curious are now being used to destroy toxic waste, make industrial chemicals without toxic and highly flammable volatile organic compounds (VOCs) and are even making it easier to take your medicine. **4**. So what are these strange materials and why are they so supercritical?

5. If you apply enough pressure to some gases while heating them they liquefy but keep their gaseous energy. **6**. Conversely, heating some liquids while you apply pressure gives them gaseous energy but without losing their density. **7**. These fluids are caught between the liquid and gas phase above a certain critical temperature and pressure - they are supercritical fluids, see Fig 1. **8**. Many common chemicals can become supercritical, from carbon dioxide and water to the noble gas xenon.

9. Water, for instance, becomes a supercritical fluid when it is heated above 374ºC and put under a pressure of 218 atmos. **10**. The fluid looks like a liquid but strangely, on the one hand can be mixed with oil but on the other will no longer dissolve ordinary table salt. **11**. These effects can be explained by the changes in the bonds between water molecules which, in the supercritical state, become weaker than normal. **12**. So, oily molecules can squeeze in between them but they are too weak to hold the sodium and chloride ions from salt. **13**. Amazingly, oxygen dissolved in supercritical water supports 'flameless' combustion. **14**. Scientists at Sandia National Laboratories in New Mexico are using this property to destroy industrial and domestic waste without the need for conventional incineration. **15**. Dissolved salts and metals come out of the solution and can be recycled or disposed of safely, while the organic content is broken down into carbon dioxide and water by the oxidation process. **16**. The process works at lower temperatures than incineration, so there are no nitrogen oxide pollutants produced.

17. Organic chemists from the University of Leeds have also been quick to latch on to Zosel's early discovery and have been using SCFs to extract natural products from plants and other organic materials for years. **18**. Natural flavour molecules, such as vanilla, for instance, can be cleanly extracted from the pod using an SCF. **19**. More recently, though, chemists have turned to SCFs to dissolve reactants that usually need a toxic and flammable VOC or do not dissolve at all.

20. Synthetic chemists are using SCFs in the manufacture of new types of polymer and other molecules that could function as industrial catalysts, thus avoiding the use of harmful solvents. **21**. Joseph DeSimone's group at the University of North Carolina in Chapel Hill, for example, is using supercritical carbon dioxide to make new types of fluorine-containing polymer. **22**. Adding fluorine atoms to a polymer chain is used to make some tough, smooth and chemically inert materials. **23**.

Polytetrafluoroethene (PTFE or Teflon) was one of the earliest fluoropolymers, and is still used to coat non-stick frying pans! **24**. Modern fluoropolymers have more high-tech applications, such as acting as 'dry' lubricating layers for the moving parts in computers, eg hard drives, where a drop of oil would wreck the electronics. **25**. The problem with making these new fluoropolymers, however, is that fluorine atoms have a residual negative charge, which makes them polar so they dissolve best in water. **26**. This makes it difficult to process them further because any other chemicals added will usually be soluble only in organic solvents.

27. DeSimone’s team has got around this problem by using supercritical carbon dioxide instead. **28**. The chemists can now control the length of the polymer chains and their precise chemical structure. **29**. This leads to consistent materials for high-tech. aerospace and electronic applications.

30. Martyn Poliakoff and his team at the University of Nottingham, meanwhile, are exploring how SCFs can help them make new industrial catalysts. **31**. They have discovered that they can make organometallic compounds such as metal carbonyls, many of which are too unstable to prepare by conventional methods. **32**. Metal carbonyls are used in various industrial reactions as catalysts for speeding up the production of simple materials such as formic acid and formaldehyde and more complex compounds, like pharmaceuticals and polymers. **33**. Carbonyl compounds in which nitrogen or hydrogen molecules have been substituted for a carbonyl group can catalyse more complex reactions still. **34**. For example, novel piano-stool shaped manganese carbonyls with an attached dihydrogen might be a useful polymerisation catalyst. **35**. The problem in making them is that hydrogen and nitrogen gases do not dissolve well in conventional organic solvents at room temperature so it is hard to add the atoms to the starting molecule. **36**. The Nottingham team, however, has found that hydrogen mixes very well with supercritical carbon dioxide at 80-100atmos, allowing the reaction to add hydrogen or nitrogen atoms as needed to the carbonyl compound.

37. Once the reaction is over, the SCF can be quickly recycled by releasing the pressure and trapping the carbon dioxide gas that escapes. **38**. This is one of the major advantages of SCFs over other solvents. **39**. VOCs, for instance, become contaminated during a reaction and it is expensive and wasteful to purify them. **40**. SCFs avoid this problem because once they become a gas again they leave behind any impurities,

41. SCFs are also much less viscous than liquid solvents, so they flow more easily through a reaction system. **42**. They can also get into the smallest of crevices and pits inside the reactor system. **43**. By flushing the system with an SCF once a reaction is complete any impurities can be washed out, leaving the system pristine and ready to be used again.

44. But, what about SCFs making it easier to take medicines? **45**. Scientists are now using SCFs to help them make drugs that normally have to be injected work when taken by mouth instead. **46**. A collaborative team from the US, Canada and Norway has found they can make sub-microscopic particles of the immunosuppressant drug cyclosporin, which is used to prevent transplanted organ rejection, by preparing it in supercritical carbon dioxide and then blasting it into normal water by releasing the pressure. **47**. The blast makes billions upon billions of tiny drug particles just fractions of a micrometre in size. **48**. These particles are so small that the researchers hope they will be absorbable by the gut so that patients avoid getting the needle.

49. Amazing what a little warmth and a squeeze will do.

2. 7. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rc**. chemist – chemical **s**. Zosel – he **hip**. benzene – solvent **rs**. caffeine – caffeine				
3	**rc**. chemist – chemicals **rs**. using – used **rs**. toxic – toxic **hip**. benzene – VOCs	**rc**. chemical – chemicals **rc**. curiosity – curious **rs**- supercritical – supercritical **rs**. fluid – fluids **tr**. solvent - VOCs			
4		**pc**. curiosity – strange (**curious**) **rs**- supercritical – supercritical **hip**. fluid – materials	**rs**- supercritical – supercritical **hip**. fluid – materials **psm**. curious – strange		
5					
6					**rs**. you – you+ **rs**. apply – apply **rs**. pressure – pressure **rs**. heating – heating **rc**. liquefy – liquids **pc**. keep – losing **rs**. gaseous – gaseous **rs**. energy – energy
7		**rs**- supercritical – supercritical **rs**. fluid – fluids	**rs**- supercritical – supercritical **rs**. fluids – fluids	**tr**. materials – fluids **rs**- supercritical – supercritical	**rs**. pressure – pressure **rs**. gases – gas **rc**. liquefy – liquid
8	**rc**. chemist – chemicals	**rc**. chemical – chemicals **rs**- supercritical – supercritical	**rs**- supercritical – supercritical **rs**. chemicals – chemicals	**rs**- supercritical – supercritical	**rs**. gases – gas
9		**rs**- supercritical – supercritical **rs**. fluid – fluid	**rs**- supercritical – supercritical **rs**. fluids – fluid	**tr**. materials – fluid **rs**- supercritical – supercritical	**psm**. apply – put under **rs**. pressure – pressure **rs**. heating – heated
10		**pc**. curiosity – strangely (**curiously**) **rs**. fluid – fluid **rs**. dissolve – dissolve*	**rs**. fluids – fluid **pc**. curious – strangely (**strange**)	**rc**. strange – strangely **tr**. materials – fluid	**rc**. liquefy – liquid
11		**rs**- supercritical – supercritical	**rs**- supercritical – supercritical	**rs**- supercritical – supercritical	

	1	2	3	4	5
12					
13		**rs**. supercritical – supercritical **rs**. dissolve – dissolved	**rs**. supercritical – supercritical	**rs**. supercritical – supercritical	
14	**hip**. chemist – scientists **rs**. using – using*	**tr**. chemical – scientists	**rs**. used – using* **rs**. destroy –destroy **rs**. waste – waste **tr**. chemicals – scientists		
15		**rs**. dissolve – dissolved*	**psm**. destroy – disposed of		
16					
17	**rs**. chemist – chemists **rs**. Zosel – Zosel **pc**. found – discovery (**discover**) **rs**. using – using **rs**. extract – extract **hip**. caffeine – products	**rc**. discovered – discovery **rc**. chemical – chemists **rs**. SCF – SCFs **hip**. caffeine – products	**psm**. supercritical fluids – SCFs **rs**. used – using **rc**. chemicals – chemists		
18	**rs**. using – using **rs**. extract – extracted **hip**. caffeine – molecules	**rs**. SCF – SCF **hip**. caffeine – molecules	**psm**. supercritical fluids – SCF **rs**. used – using		
19	**rs**. chemist – chemists **rs**. toxic – toxic **hip**. benzene – VOC	**rc**. chemical – chemists **rs**. SCF – SCFs **rs**. dissolve – dissolve **tr**. solvent – VOC	**psm**. supercritical fluids – SCFs **rc**. chemicals – chemists **rs**. toxic – toxic **rs**. flammable – flammable **rs**. VOCs – VOC		
20	**rs**. chemist – chemists **rs**. using – using **hip**. benzene – solvents	**rc**. chemical – chemists **rs**. SCF – SCFs **rs**. solvent – solvents	**psm**. supercritical fluids – SCFs **rs**. used – using **pc**. make – manufacture (**making**) **rs**. industrial – industrial **rc**. chemicals – chemists **hip**. VOC – solvents		

	1	2	3	4	5
21	**rs**. using – using	**rs**. supercritical – supercritical	**rs**. supercritical – supercritical **rs**. used – using **rs**. make – make	**rs**. supercritical – supercritical	
22	**rc**. chemist – chemically **rs**. using – used*	**rc**. chemical – chemically	**rs**. used – used* **rs**. make – make **rc**. chemicals – chemically		
23	**rs**. using – used*		**rs**. used – used*		
24	**pc**. using – applications* (**use**)		**pc**. used – applications* (**use**)		
25		**rs**. dissolve – dissolve **rc**. residue – residual	**rs**. make – making		
26	**rc**. chemist – chemicals **hip**. benzene – solvents	**rc**. chemical – chemicals **rs**. solvent – solvents	**rs**. chemicals – chemicals **rs**. organic – organic **hip**. VOCs – solvents		
27	**rs**. using – using	**rs**. supercritical – supercritical	**rs**. supercritical – supercritical **rs**. used – using	**rs**. supercritical – supercritical	
28	**rs**. chemist – chemists	**rc**. chemical – chemists	**rc**. chemicals – chemists		
29	**pc**. using – applications* (**use**)		**pc**. used – applications* (**use**)		
30		**rs**. SCF – SCFs	**psm**. supercritical fluids – SCFs **rs**. make – make **rs**. industrial – industrial		
31	**psm**. found – discovered	**rs**. discovered – discovered	**rs**. make – make		
32	**rs**. using – used*		**rs**. used – used* **pc**. make – production* (**making**) **rs**. industrial – industrial		

	1	2	3	4	5
33					
34	**rc**. using – useful*		**rc**. used – useful*		
35	**hip**. benzene – solvents	**rs**. dissolve – dissolve **rs**. solvent – solvents	**rs**. make – making **rs**. organic – organic **hip**. VOCs – solvents		
36	**rs**. found – found	**psm**. discovered – found **rs**. supercritical – supercritical	**rs**. supercritical – supercritical	**rs**. supercritical – supercritical	
37		**rs**. SCF – SCF	**psm**. supercritical – fluids – SCF		**rs**. pressure – pressure **rs**. gases – gas
38	**hip**. benzene – solvents	**rs**. SCF – SCFs **rs**. solvent – solvents	**psm**. supercritical – fluids – SCFs **hip**. VOCs – solvents		
39	**hip**. benzene - VOCs	**tr**. solvent – VOCs	**rs**. VOCs – VOCs		
40		**rs**. SCF – SCFs **rs**. leave – leave	**psm**. supercritical – fluids – SCFs		**rs**. gases – gas
41	**hip**. benzene – solvents	**rs**. SCF – SCFs **rs**. solvent – solvents	**psm**. supercritical – fluids – SCFs **hip**. VOCs – solvents		
42		**s**. SCF – they	**s**. supercritical fluids – they		
43		**rs**. SCF – SCF **rs**. leave – leaving*	**psm**. supercritical – fluids – SCF		
44		**rs**. SCF – SCFs	**psm**. supercritical – fluids – SCFs **rs**. making – making **rs**. easier – easier **rs**. take – take **rs**. medicine – medicines		

	1	2	3	4	5
45	**hip**. chemist – scientists **rs**. using – using	**tr**. chemical – scientists **rs**. SCF – SCFs	**psm**. supercritical – fluids – SCFs **rs**. used – using **rs**. make – make **tr**. chemicals – scientists **psm**. medicine – drugs		
46	**rs**. found – found **rs**. using – used*	**psm**. discovered – found **rs**. supercritical – supercritical	**rs**. supercritical – supercritical **rs**. used – used* **rs**. make – make **psm**. medicine – drug	**rs**. supercritical – supercritical	**rs**. pressure – pressure
47			**psm**. medicine – drug		
48	**hip**. chemist – researchers	**tr**. chemical – researchers	**tr**. chemicals – researchers		
49					

	6	7	8	9	10
7	**rs**. liquids – liquid **rs**. pressure – pressure **rc** gaseous – gas				
8	**rc** gaseous – gas	**rs**. supercritical – supercritical			
9	**rs**. heating – heated **psm**. apply – put under **rs**. pressure – pressure	**rs**. pressure – pressure **rs**. supercritical – supercritical **rs**. fluids – fluid	**rs**. become – becomes **rs**. supercritical – supercritical **rs**. water – water		
10	**rs**. liquids – liquid	**rs**. liquid – liquid **rs**. fluids – fluid		**rs**. fluid – fluid	
11		**rs**. supercritical – supercritical	**rs**. become – become **rs**. supercritical – supercritical **rs**. water – water	**rs**. water – water **rs**. becomes – become* **rs**. supercritical – supercritical	**d**. oración 10 – these
12					**rc**. oil – oily **rs**. salt – salt
13		**rs**. supercritical – supercritical	**rs**. supercritical – supercritical **rs**. water – water	**rs**. water – water **rs**. supercritical – supercritical	
14			**tr**. chemicals – scientists		
15					
16					
17		**psm**. supercritical fluids – SCFs	**rc**. chemicals – chemists **hip**. carbon dioxide …. gas xenon – SCFs	**psm**. supercritical fluids – SCFs	
18		**psm**. supercritical fluids – SCF	**hip**. carbon dioxide …. gas xenon – SCF	**psm**. supercritical fluids – SCF	

	6	7	8	9	10
19		**psm**. supercritical fluids – SCFs	**rc**. chemicals – chemists **hip**. carbon dioxide …. gas xenon – SCFs	**psm**. supercritical fluid – SCFs	
20		**psm**. supercritical fluids – SCFs	**rc**. chemicals – chemists **hip**. carbon dioxide …. gas xenon – SCFs	**psm**. supercritical fluid – SCFs	
21		**rs**. supercritical – supercritical	**rs**. supercritical – supercritical **rs**. carbon – carbon **rs**. dioxide – dioxide	**rs**. supercritical – supercritical	
22			**rc**. chemicals – chemically		
23					
24					
25			**rs**. water – water	**rs**. water – water	
26			**rs**. chemicals – chemicals		
27		**rs**. supercritical – supercritical	**rs**. supercritical – supercritical **rs**. carbon – carbon **rs**. dioxide – dioxide	**rs**. supercritical – supercritical	
28			**rc**. chemicals – chemists		
29					
30		**psm**. supercritical fluids – SCFs	**hip**. carbon dioxide …. gas xenon – SCFs	**psm**. supercritical fluid – SCFs	
31					
32					
33					

	6	7	8	9	10
34					
35	**rc**. gaseous – gases	**rs**. temperature – temperature			
36		**rs**. supercritical – supercritical	**rs**. supercritical – supercritical **rs**. carbon – carbon **rs**. dioxide – dioxide	**rs**. supercritical – supercritical	
37	**rs**. pressure – pressure **rc**. gaseous – gas	**rs**. pressure – pressure **psm**. supercritical fluids – SCF	**hip**. carbon dioxide …. gas xenon – SCF	**psm**. supercritical fluid – SCF **rs**. pressure – pressure	
38		**psm**. supercritical fluids – SCFs	**hip**. carbon dioxide …. gas xenon – SCFs	**psm**. supercritical fluid – SCFs	
39					
40	**rc**. gaseous – gas	**rs**. gas – gas **psm**. supercritical fluids – SCFs	**hip**. carbon dioxide …. gas xenon – SCFs	**psm**. supercritical fluid – SCFs	
41		**psm**. supercritical fluids – SCFs	**hip**. carbon dioxide …. gas xenon – SCFs	**psm**. supercritical fluid – SCFs	
42					
43		**psm**. supercritical fluids – SCF	**hip**. carbon dioxide …. gas xenon – SCF	**psm**. supercritical fluid – SCF	
44		**psm**. supercritical fluids – SCFs	**hip**. carbon dioxide …. gas xenon – SCFs	**psm**. supercritical fluid – SCFs	
45		**psm**. supercritical fluids – SCFs	**tr**. chemicals – scientists **hip**. carbon dioxide …. gas xenon – SCFs	**psm**. supercritical fluid – SCFs	
46	**rs**. pressure – pressure	**rs**. pressure – pressure **rs**. supercritical – supercritical	**rs**. supercritical – supercritical **rs**. carbon – carbon **rs**. dioxide – dioxide	**rs**. supercritical – supercritical **rs**. pressure – pressure	

	6	7	8	9	10
47					
48			**tr**. chemicals – researchers		
49					

	11	12	13	14	15
12	**s**. bonds – them **rs**. molecules – molecules **rc**. weaker – weak				
13	**rs**. water – water **rs**. supercritical – supercritical				
14			**d**. oración 13 – this		
15			**rs**. dissolved – dissolved*	**psm**. destroy – disposed of	
16				**rs**. incineration – incineration	**rc**. dioxide – oxide **rs**. process – process
17			**hip**. supercritical water – SCFs	**tr**. scientists – chemists **rs**. using – using*	
18			**hip**. supercritical water – SCF	**rs**. using – using*	
19			**rs**. dissolved – dissolve **hip**. supercritical water – SCFs **rc**. flameless – flammable	**tr**. scientists – chemists	**rs**. dissolved – dissolve*
20			**hip**. supercritical water – SCFs	**tr**. scientists – chemists **rs**. using – using*	
21	**rs**. supercritical – supercritical		**tr**. supercritical water – supercritical carbon dioxide	**rs**. using – using*	
22					
23					
24					
25	**rs**. water – water		**rs**. dissolved – dissolve **rs**. water – water		**rs**. dissolved – dissolve*

	11	12	13	14	15
26					
27	**rs**. supercritical – supercritical		**tr**. supercritical water – supercritical carbon dioxide	**rs**. using – using*	
28				**tr**. scientists – chemists	
29					
30			**hip**. supercritical water – SCFs		
31					
32					
33					
34					
35			**rs**. dissolved – dissolve		
36	**rs**. supercritical – supercritical		**tr**. supercritical water – supercritical carbon dioxide		
37			**hip**. supercritical water – SCF		
38			**hip**. supercritical water – SCFs		
39					
40			**hip**. supercritical water – SCFs		
41			**hip**. supercritical water – SCFs		

	11	12	13	14	15
42					
43			**hip**. supercritical water – SCF		
44			**hip**. supercritical water – SCFs		
45			**hip**. supercritical water – SCFs	**rs**. scientists – scientists **rs**. using – using*	
46	**rs**. supercritical – supercritical		**tr**. supercritical water – supercritical carbon dioxide		
47					
48				**tr**. scientists – researchers	
49			**rc**. amazingly – amazing		

	16	17	18	19	20
17					
18		**rs**. using – using **rs**. SCFs – SCF **rs**. extract – extracted **rs**. natural – natural **tr**. products – molecules			
19		**rs**. chemists – chemists **rs**. SCFs – SCFs	**rs**. SCF – SCFs		
20		**rs**. chemists – chemists **rs**. using – using **rs**. SCFs – SCFs	**rs**. using – using **rs**. SCF – SCFs	**rs**. chemists – chemists **rs**. SCFs – SCFs **hip**. VOC – solvents	
21		**rs**. university – university **rs**. using – using **tr**. SCFs – supercritical carbon dioxide	**rs**. using – using **tr**. SCF – supercritical carbon dioxide	**tr**. SCFs – supercritical carbon dioxide	**rs**. using – using **tr**. SCFs – supercritical carbon dioxide **pc**. manufacture – make (**making**) **rs**. new – new **rs**. types – types **rs**. polymer – polymer
22		**rc**. chemists – chemically **rs**. using – used*	**rs**. using – used*	**rc**. chemists – chemically	**rc**. chemists – chemically **rs**. using – used **pc**. manufacture – make*(**making**) **rs**. polymer – polymer
23		**rs**. using – used*	**rs**. using – used*		**rs**. using – used **rc**. polymer – fluoropolymers
24		**pc**. using – applications* (**use**)	**pc**. using – applications* (**use**)		**pc**. using – applications (**use**) **rc**. polymer – fluoropolymers
25				**rs**. dissolve – dissolve	**psm**. manufacture – making **rs**. new – new **rc**. polymer – fluoropolymers
26		**rc**. chemists – chemicals		**rc**. chemists – chemicals **hip**. VOC – solvents	**rc**. chemists – chemicals **rs**. solvents – solvents

	16	17	18	19	20
27		**rs**. using – using **tr**. SCFs – supercritical carbon dioxide	**rs**. using – using **tr**. SCF – supercritical carbon dioxide	**tr**. SCFs – supercritical carbon dioxide	**rs**. using – using **tr**. SCFs – supercritical carbon dioxide
28		**rs**. chemists – chemists		**rs**. chemists – chemists	**rs**. chemists – chemists **rs**. polymer – polymer
29		**pc**. using – applications* (**use**)	**pc**. using – applications* (**use**)		**pc**. using – applications* (**use**)
30		**rs**. SCFs – SCFs	**rs**. SCF – SCFs	**rs**. SCFs – SCFs	**rs**. SCFs – SCFs **pc**. manufacture – make (**making**) **rs**. new – new **rs**. industrial – industrial **rs**. catalysts – catalysts
31		**rc**. discovery – discovered			**pc**. manufacture – make (**making**)
32		**rs**. using – used*	**rs**. using – used*	**rc**. reactants – reactions	**rs**. using – used* **psm**. manufacture – production **rs**. polymer – polymers **rs**. industrial – industrial **rs**. catalysts – catalysts
33				**rc**. reactants – reactions	**rc**. catalysts – catalyse
34		**rc**. using – useful*	**rc**. using – useful*		**rc**. using – useful* **rc**. polymer – polymerisation **rs**. catalysts – catalyst
35				**rs**. dissolve – dissolve **hip**. VOC – solvents	**psm**. manufacture – making **rs**. solvents – solvents
36		**pc**. discovery – found (**discover**) **tr**. SCFs – supercritical carbon dioxide	**tr**. SCF – supercritical carbon dioxide	**tr**. SCF – supercritical carbon dioxide **rc**. reactants – reactions	**tr**. SCFs – supercritical carbon dioxide
37		**rs**. SCFs – SCF	**rs**. SCF – SCF	**rs**. SCFs – SCF **rc**. reactants – reaction	**rs**. SCFs – SCF

	16	17	18	19	20
38		**rs**. SCFs – SCFs	**rs**. SCF – SCFs	**rs**. SCFs – SCFs **hip**. VOC – solvents	**rs**. SCFs – SCFs **rs**. solvents – solvents
39				**rc**. reactants – reaction **rs**. VOC – VOCs	**tr**. solvents – VOCs
40		**rs**. SCFs – SCFs	**rs**. SCF – SCFs	**rs**. SCFs – SCFs	**rs**. SCFs – SCFs
41		**rs**. SCFs – SCFs	**rs**. SCF – SCFs	**rs**. SCFs – SCFs **rc**. reactants – reaction **hip**. VOC – solvents	**rs**. SCFs – SCFs **rs**. solvents – solvents
42		**s**. SCFs – they		**rc**. reactants – reactor	**s**. SCFs – they
43		**rs**. SCFs – SCF	**rs**. SCF – SCF	**rs**. SCFs – SCF **rc**. reactants – reaction	**rs**. SCFs – SCF
44		**rs**. SCFs – SCFs	**rs**. SCF – SCFs	**rs**. SCFs – SCFs	**rs**. SCFs – SCFs
45		**hip**. chemists – scientists **rs**. using – using **rs**. SCFs – SCFs	**rs**. using – using **rs**. SCF – SCFs	**hip**. chemists – scientists **rs**. SCFs – SCFs	**hip**. chemists – scientists **rs**. using – using **rs**. SCFs – SCFs **pc**. manufacture – make (**making**)
46		**pc**. discovery – found (**discover**) **rs**. using – used **tr**. SCFs – supercritical carbon dioxide	**rs**. using – used* **tr**. SCF – supercritical carbon dioxide	**tr**. SCFs – supercritical carbon dioxide	**rs**. using – used* **tr**. SCFs – supercritical carbon dioxide **pc**. manufacture – make (**making**)
47					
48		**hip**. chemists – researchers		**hip**. chemists – researchers	**hip**. chemists – researchers
49					

	21	22	23	24	25
22	**rs**. using – used **rs**. make – make **rs**. fluorine – fluorine **rs**. polymer – polymer				
23	**rs**. using – used* **rc**. polymer – fluoropolymers	**rs**. polymer – fluoropolymers **rs**. used – used			
24	**pc**. using – applications* (**use**) **rc**. polymer – fluoropolymers	**rc**. polymer – fluoropolymers **pc**. used – applications (**use**)	**rs**. fluoropolymers – fluoropolymers **pc**. used – applications (**use**)		
25	**rs**. make – making **rs**. new – new **rs**. fluorine – fluorine **rc**. polymer – fluoropolymers	**rs**. fluorine – fluorine **rs**. atoms – atoms **rc**. polymer – fluoropolymers **rs**. make – making	**rs**. fluoropolymers – fluoropolymers	**rs**. fluoropolymers – fluoropolymers	
26		**rs**. adding – added **rc**. chemically – chemicals	**s**. fluoropolymers – them	**s**. fluoropolymers – them	**d**. fluorine atoms …. in water – this **rs**. them – them **hip**. water – solvents
27	**psm**. group – team **rs**. using – using **rs**. supercritical – supercritical **rs**. carbon – carbon **rs**. dioxide – dioxide	**rs**. used – using*			**rs**. problem – problem
28	**rs**. polymer – polymer	**rs**. polymer – polymer **rs**. chain – chains **rc**. chemically – chemists	**rc**. fluoropolymers – polymer	**rc**. fluoropolymers – polymer	**rc**. fluoropolymers – polymer
29	**pc**. using – applications* (**use**)	**pc**. used – applications (**use**) **rs**. materials – materials	**pc**. used – applications (**use**)	**rs**. high – high **rs**. tech – tech **rs**. applications – applications	
30	**psm**. group – team **rs**. university – university **hip**. supercritical carbon dioxide – SCFs **rs**. make – make	**rs**. make – make			

	21	22	23	24	25
31	**rs**. make – make	**rs**. make – make			
32	**rs**. using – used* **pc**. make – production (**produce**) **rs**. polymer – polymers	**rs**. polymer – polymers **rs**. used – used **pc**. make – production (**produce**) **rs**. materials – materials	**rs**. used – used **rc**. fluoropolymers – polymers	**rc**. fluoropolymers – polymers	**rc**. fluoropolymers – polymers
33					
34	**rc**. using – useful* **rc**. polymer – polymerisation	**rc**. used – useful **rc**. polymer – polymerisation	**rc**. used – useful **tr**. fluoropolymers – polymerisation	**tr**. fluoropolymers – polymerisation	**tr**. fluoropolymers – polymerisation
35	**rs**. make – making	**rs**. adding – add **rs**. atoms – atoms **rs**. make – making			**rs**. problem – problem **rs**. making – making **rs**. atoms – atoms **rs**. dissolve – dissolve
36	**psm**. group – team **rs**. supercritical – supercritical **rs**. carbon – carbon **rs**. dioxide – dioxide	**rs**. adding – add **rs**. atoms – atoms			**rs**. atoms – atoms
37	**hip**. supercritical carbon dioxide – SCF				
38	**hip**. supercritical carbon dioxide – SCFs				
39					
40	**hip**. supercritical carbon dioxide – SCFs				
41	**hip**. supercritical carbon dioxide – SCFs				
42					

	21	22	23	24	25
43	**hip**. supercritical carbon dioxide – SCF				
44	**hip**. supercritical carbon dioxide – SCFs				
45	**rs**. using – using **hip**. supercritical carbon dioxide – SCFs **rs**. make – make	**rs**. used – using*	**rs**. used – using*	**pc**. applications – using* (**use**)	
46	**psm**. group – team **rs**. using – used* **rs**. supercritical – supercritical **rs**. carbon – carbon **rs**. dioxide – dioxide **rs**. make – make				
47					
48					
49					

	26	27	28	29	30
27	**rs**. this – this				
28	**rc**. chemicals – chemists				
29			**d**. oración 28 – this		
30		**rs**. team – team **hip**. supercritical carbon dioxide - SCFs			
31					**rs**. can – can **rs**. them – they **rs**. make – make
32		**rs**. using – used*	**rs**. polymer – polymers		**pc**. make – production (**produce**) **rs**. industrial – industrial **rs**. catalysts – catalysts
33					**rc**. catalysts – catalyse
34		**rc**. using – useful*	**rc**. polymer – polymerisation		**rs**. catalysts – catalyst
35	**rs**. added – add **rs**. organic – organic **rs**. solvents – solvents				**rs**. make – making
36		**rs**. team – team **rs**. supercritical – supercritical **rs**. carbon – carbon **rs**. dioxide – dioxide			**rs**. team – team **rs**. Nottingham – Nottingham **tr**. SCFs – supercritical carbon dioxide
37		**hip**. supercritical carbon dioxide - SCF			**rs**. SCFs – SCF
38	**rs**. solvents – solvents	**hip**. supercritical carbon dioxide - SCFs			**rs**. SCFs – SCFs

	26	27	28	29	30
39	**tr**. solvents – VOCs				
40		**rs**. problem – problem **hip**. supercritical carbon dioxide – SCFs			**rs**. SCFs – SCFs
41	**rs**. solvents – solvents	**hip**. supercritical carbon dioxide – SCFs			**rs**. SCFs – SCFs
42					**s**. SCFs – they
43		**hip**. supercritical carbon dioxide – SCF			**rs**. SCFs – SCF
44		**hip**. supercritical carbon dioxide – SCFs			**rs**. SCFs – SCFs
45		**rs**. using – using **hip**. supercritical carbon dioxide – SCFs	**hip**. chemists – scientists		**rs**. SCFs – SCFs **rs**. help – help **rs**. make – make
46		**rs**. team – team **rs**. using – used* **rs**. supercritical – supercritical **rs**. carbon – carbon **rs**. dioxide – dioxide			**rs**. team – team **tr**. SCFs – supercritical carbon dioxide **rs**. make – make
47					
48			**hip**. chemists – researchers		
49					

	31	32	33	34	35
32	**pc**. make – production (**making**) **rs**. compounds – compounds **rs**. metal – metal **rs**. carbonyls – carbonyls				
33	**rs**. compounds – compounds **rs**. carbonyls – carbonyl	**rs**. carbonyls – carbonyl **rs**. reactions – reactions **rc**. catalysts – catalise **rs**. compounds – compounds*			
34	**rs**. carbonyls – carbonyls	**rs**. carbonyls – carbonyls **rc**. used – useful **rs**. catalysts – catalyst **rc**. polymers – polymerisation	**rs**. carbonyls – carbonyls **rc**. hydrogen – dihydrogen **rc**. catalyse – catalyst		
35	**rs**. make – making **s**. carbonyls – them **rs**. conventional – conventional	**s**. carbonyls – them **pc**. production – making* (**produce**)	**rs**. nitrogen – nitrogen **rs**. hydrogen – hydrogen **rs**. molecules – molecule	**s**. carbonyls – them **psm**. attached – add **rc**. dihydrogen – hydrogen	
36	**psm**. discovered – found **rs**. compounds – compound **rs**. carbonyls – carbonyl	**rs**. carbonyls – carbonyl **rs**. reactions – reaction **rs**. compounds – compound*	**rs**. carbonyl – carbonyl **rs**. compounds – compound **rs**. nitrogen – nitrogen **rs**. hydrogen – hydrogen **rs**. reactions – reaction	**rs**. carbonyls – carbonyl **psm**. attached – add **rc**. dihydrogen – hydrogen	**rs**. hydrogen – hydrogen **rs**. nitrogen – nitrogen **rs**. add – add **rs**. atoms – atoms
37		**rs**. reactions – reaction	**rs**. reactions – reaction		
38					**rs**. solvents – solvents
39		**rs**. reactions – reaction	**rs**. reactions – reaction		**tr**. solvents – VOCs
40					
41		**rs**. reactions – reaction	**rs**. reactions – reaction		**rs**. solvents – solvents

	31	32	33	34	35
42		**rc**. reactions – reactor	**rc**. reactions – reactor		
43		**rs**. reactions – reaction	**rs**. reactions – reaction		
44					
45	**rs**. make – make				
46	**psm**. discovered – found **rs**. make – make **rs**. prepare – preparing				
47					
48					
49					

	36	37	38	39	40
37	**hip**. supercritical carbon dioxide – SCF **rs**. reaction – reaction				
38	**hip**. supercritical carbon dioxide – SCFs	**d**. oración 37 – this **rs**. SCF - SCFs			
39	**rs**. reaction – reaction	**rs**. reaction – reaction	**tr**. solvents – VOCs		
40	**hip**. supercritical carbon dioxide – SCFs	**rs**. SCF - SCFs	**rs**. SCFs - SCFs	**d**. oración 39 – this **rc**. purify – impurities	
41	**hip**. supercritical carbon dioxide – SCFs **rs**. reaction – reaction	**rs**. reaction – reaction **rs**. SCF - SCFs	**rs**. SCFs - SCFs	**hip**. VOCs – solvents **rs**. reaction – reaction	**rs**. SCFs - SCFs
42	**rc**. reaction – reactor	**rc**. reaction – reactor	**s**. SCFs – they	**rc**. reaction – reactor	**s**. SCFs – they
43	**hip**. supercritical carbon dioxide – SCF **rs**. reaction – reaction	**rs**. reaction – reaction **psm**. is over – is complete **rs**. SCF - SCF	**rs**. SCFs - SCF	**rs**. reaction – reaction **rc**. purify – impurities	**rs**. SCFs – SCF **rs**. leave – leaving **rs**. impurities – impurities
44	**hip**. supercritical carbon dioxide – SCFs	**rs**. SCF - SCFs	**rs**. SCFs - SCFs		**rs**. SCFs - SCFs
45	**hip**. supercritical carbon dioxide – SCFs	**rs**. SCF - SCFs	**rs**. SCFs - SCFs		**rs**. SCFs - SCFs
46	**rs**. team – team **rs**. found – found **rs**. supercritical – supercritical **rs**. carbon – carbon **rs**. dioxide – dioxide	**tr**. SCF – supercritical carbon dioxide **rs**. releasing – releasing **rs**. pressure – pressure	**tr**. SCFs – supercritical carbon dioxide		**tr**. SCFs – supercritical carbon dioxide
47					
48					
49					

	41	42	43	44	45	46	47	48
42	**s**. SCFs – they **rc**. reaction – reactor **rs**. system – system							
43	**rs**. SCFs – SCF **rs**. reaction – reaction **rs**. system – system	**rc**. reactor – reaction **rs**. system – system						
44	**rs**. SCFs – SCFs		**rs**. SCF – SCFs					
45	**rs**. SCFs – SCFs		**rs**. SCF – SCFs	**rs**. SCFs – SCFs **rs**. take – taken **psm**. medicines – drugs				
46	**tr**. SCFs – supercrit. carbon dioxide		**tr**. SCF – supercrit. carbon dioxide	**tr**. SCFs – supercrit. carbon dioxide **psm**. medicines – drug	**rs**. using – used* **tr**. SCFs – supercrit. carbon dioxide **rs**. make – make **rs**. drugs – drug			
47				**psm**. medicines – drug	**rs**. drugs – drug	**rs**. drugs – drug **rc**. blasting – blast		
48					**psm**. scientists – researchers		**rs**. particles – particles	
49								

2. 7. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11
2	4										
3	4	5									
4	0	3	3								
5	0	0	0	0							
6	0	0	0	0	7(8)						
7	0	2	2	2	3	3					
8	1	2	2	1	1	1	1				
9	0	2	2	2	3	3	3	3			
10	0	2(3)	2	2	1	1	2	0	1		
11	0	1	1	1	0	0	1	3	2(3)	1	
12	0	0	0	0	0	0	0	0	0	2	3
13	0	2	1	1	0	0	1	2	2	0	2
14	1(2)	1	3(4)	0	0	0	0	1	0	0	0
15	0	0(1)	1	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0
17	6	4	3	0	0	0	1	2	1	0	0
18	3	2	2	0	0	0	1	1	1	0	0
19	3	4	5	0	0	0	1	2	1	0	0
20	3	3	6	0	0	0	1	2	1	0	0
21	1	1	3	1	0	0	1	3	1	0	1
22	1(2)	1	2(3)	0	0	0	0	1	0	0	0

	1	2	3	4	5	6	7	8	9	10	11
23	0(1)	0	0(1)	0	0	0	0	0	0	0	0
24	0(1)	0	0(1)	0	0	0	0	0	0	0	0
25	0	2	1	0	0	0	0	1	1	0	1
26	2	2	3	0	0	0	0	1	0	0	0
27	1	1	2	1	0	0	1	3	1	0	1
28	1	1	1	0	0	0	0	1	0	0	0
29	0(1)	0	0(1)	0	0	0	0	0	0	0	0
30	0	1	3	0	0	0	1	1	1	0	0
31	1	1	1	0	0	0	0	0	0	0	0
32	0(1)	0	1(3)	0	0	0	0	0	0	0	0
33	0	0	0	0	0	0	0	0	0	0	0
34	0(1)	0	0(1)	0	0	0	0	0	0	0	0
35	1	2	3	0	0	1	1	0	0	0	0
36	1	2	1	1	0	0	1	3	1	0	1
37	0	1	1	0	2	2	2	1	2	0	0
38	1	2	2	0	0	0	1	1	1	0	0
39	1	1	1	0	0	0	0	0	0	0	0
40	0	2	1	0	1	1	2	1	1	0	0
41	1	2	2	0	0	0	1	1	1	0	0
42	0	1	1	0	0	0	0	0	0	0	0
43	0	1(2)	1	0	0	0	1	1	1	0	0
44	0	1	5	0	0	0	1	1	1	0	0

	1	2	3	4	5	6	7	8	9	10	11
45	2	2	5	0	0	0	1	2	1	0	0
46	1(2)	2	3(4)	1	1	1	2	3	2	0	1
47	0	0	1	0	0	0	0	0	0	0	0
48	1	1	1	0	0	0	0	1	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0

	12	13	14	15	16	17	18	19	20	21	22
13	0										
14	0	1									
15	0	0(1)	1								
16	0	0	1	2							
17	0	1	1(2)	0	0						
18	0	1	0(1)	0	0	5					
19	0	3	1	0(1)	0	2	1				
20	0	1	1(2)	0	0	3	2	3			
21	0	1	0(1)	0	0	3	2	1	6		
22	0	0	0	0	0	1(2)	0(1)	1	4	4	
23	0	0	0	0	0	0(1)	0(1)	0	2	1(2)	2
24	0	0	0	0	0	0(1)	0(1)	0	2	1(2)	2
25	0	2	0	0(1)	0	0	0	1	3	4	4
26	0	0	0	0	0	1	0	2	2	0	2
27	0	1	0(1)	0	0	2	2	1	2	5	0(1)
28	0	0	1	0	0	1	0	1	2	1	3
29	0	0	0	0	0	0(1)	0(1)	0	0(1)	0(1)	2
30	0	1	0	0	0	1	1	1	5	4	1
31	0	0	0	0	0	1	0	0	1	1	1
32	0	0	0	0	0	0(1)	0(1)	1	4(5)	2(3)	4
33	0	0	0	0	0	0	0	1	1	0	0
34	0	0	0	0	0	0(1)	0(1)	0	2(3)	1(2)	2

	12	13	14	15	16	17	18	19	20	21	22
35	0	1	0	0	0	0	0	2	2	1	3
36	0	1	0	0	0	2	1	2	1	4	2
37	0	1	0	0	0	1	1	2	1	1	0
38	0	1	0	0	0	1	1	2	2	1	0
39	0	0	0	0	0	0	0	2	1	0	0
40	0	1	0	0	0	1	1	1	1	1	0
41	0	1	0	0	0	1	1	3	2	1	0
42	0	0	0	0	0	1	0	1	1	0	0
43	0	1	0	0	0	1	1	2	1	1	0
44	0	1	0	0	0	1	1	1	1	1	0
45	0	1	1(2)	0	0	3	2	2	4	3	0(1)
46	0	1	0	0	0	3	1(2)	1	2(3)	5(6)	0
47	0	0	0	0	0	0	0	0	0	0	0
48	0	0	1	0	0	1	0	1	1	0	0
49	0	1	0	0	0	0	0	0	0	0	0

	23	24	25	26	27	28	29	30	31	32	33
24	2										
25	1	1									
26	1	1	3								
27	0	0	1	1							
28	1	1	1	1	0						
29	1	3	0	0	0	1					
30	0	0	0	0	2	0	0				
31	0	0	0	0	0	0	0	3			
32	2	1	1	0	0(1)	1	0	3	4		
33	0	0	0	0	0	0	0	1	2	3(4)	
34	2	1	1	0	0(1)	1	0	1	1	4	3
35	0	0	4	3	0	0	0	1	3	1(2)	3
36	0	0	1	0	4	0	0	3	3	2(3)	5
37	0	0	0	0	1	0	0	1	0	1	1
38	0	0	0	1	1	0	0	1	0	0	0
39	0	0	0	1	0	0	0	0	0	1	1
40	0	0	0	0	2	0	0	1	0	0	0
41	0	0	0	1	1	0	0	1	0	1	1
42	0	0	0	0	0	0	0	1	0	1	1
43	0	0	0	0	1	0	0	1	0	1	1
44	0	0	0	0	1	0	0	1	0	0	0
45	0(1)	0(1)	0	0	2	1	0	3	1	0	0

	23	24	25	26	27	28	29	30	31	32	33
46	0	0	0	0	4(5)	0	0	3	3	0	0
47	0	0	0	0	0	0	0	0	0	0	0
48	0	0	0	0	0	1	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0

	34	35	36	37	38	39	40	41	42	43	44
35	3										
36	3	4									
37	0	0	2								
38	0	1	1	2							
39	0	1	1	1	1						
40	0	0	1	1	1	2					
41	0	1	2	2	1	2	1				
42	0	0	1	1	1	1	1	3			
43	0	0	2	3	1	2	3	3	2		
44	0	0	1	1	1	0	1	1	0	1	
45	0	0	1	1	1	0	1	1	0	1	3
46	0	0	5	3	1	0	1	1	0	1	2
47	0	0	0	0	0	0	0	0	0	0	1
48	0	0	0	0	0	0	0	0	0	0	0
49	0	0	0	0	0	0	0	0	0	0	0

	45	46	47	48
46	3(4)			
47	1	2		
48	1	0	1	
49	0	0	0	0

2. 7. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,6) [6]	**2**. (1,5) [6] (1,6) [7]	**3**. (2,12) [14] (2,14) [16]
4. (2,0) [2]	**5**. (0,3) [3]	**6**. (1,2) [3]
7. (2,1) [3]	**8**. (0,6) [6]	**9**. (4,0) [4] (4,1) [5]
10. (0,0) [0] (0,1) [1]	**11**. (1,1) [2] (2,1) [3]	**12**. (1,0) [1]
13. (0,1) [1]	**14**. (1,0) [1]	**15**. (0,0) [0]
16. (0,0) [0]	**17**. (3,5) [8]	**18**. (2,0) [2]
19. (4,2) [6]	**20**. (5,6) [11] (5,8) [13]	**21**. (4,7) [11] (4,8) [12]
22. (2,4) [6] (3,4) [7]	**23**. (0,0) [0]	**24**. (0,1) [1]
25. (3,2) [5]	**26**. (2,1) [3]	**27**. (2,2) [4]
28. (1,0) [1]	**29**. (1,0) [1]	**30**. (3,5) [8]
31. (1,4) [5]	**32**. (4,2) [6] (6,3) [9]	**33**. (1,3) [4]
34. (2,2) [4] (3,2) [5]	**35**. (7,1) [8]	**36**. (8,1) [9] (9,1) [10]
37. (0,2) [2]	**38**. (0,0) [0]	**39**. (0,0) [0]
40. (0,1) [1]	**41**. (1,2) [3]	**42**. (1,0) [1]
43. (3,0) [3]	**44**. (1,1) [2]	**45**. (6,1) [7]
46. (10,0) [10] (11,0) [11]	**47**. (0,0) [0]	**48**. (0,0) [0]
49. (0,-) [0]		

2. 7. 4. Texto resultante tras eliminar las oraciones marginales.

1. Decent decaffeinated coffee has been around since 1960s, when chemist Kurt Zosel found an alternative to using the toxic and unpleasant tasting benzene to extract the caffeine. **2**. He discovered that a l9th century chemical curiosity, known as a supercritical fluid (SCF), could dissolve out the caffeine but leave no solvent residue. **3**. Supercritical fluids while still curious are now being used to destroy toxic waste, make industrial chemicals without toxic and highly flammable volatile organic compounds (VOCs) and are even making it easier to take your medicine. **4**. So what are these strange materials and why are they so supercritical?

5. If you apply enough pressure to some gases while heating them they liquefy but keep their gaseous energy. **6**. Conversely, heating some liquids while you apply pressure gives them gaseous energy but without losing their density. **7**. These fluids are caught between the liquid and gas phase above a certain critical temperature and pressure - they are supercritical fluids, see Fig 1. **8**. Many common chemicals can become supercritical, from carbon dioxide and water to the noble gas xenon.

9. Water, for instance, becomes a supercritical fluid when it is heated above 374ºC and put under a pressure of 218 atmos. [5]**11**. [That the fluid looks like a liquid but strangely, on the one hand can be mixed with oil but on the other will no longer dissolve ordinary table salt] <~~These effects~~> can be explained by the changes in the bonds between water molecules which, in the supercritical state, become weaker than normal. **12**. So, oily molecules can squeeze in between them but they are too weak to hold the sodium and chloride ions from salt. **13**. Amazingly, oxygen dissolved in supercritical water supports 'flameless' combustion. **14**. Scientists at Sandia National Laboratories in New Mexico are using this property to destroy industrial and domestic waste without the need for conventional incineration.

[5] La oración 10, que establece conexiones mediante enlaces dudosos, se puede eliminar sin que la coherencia del texto original se vea afectada.

17. Organic chemists from the University of Leeds have also been quick to latch on to Zosel's early discovery and have been using SCFs to extract natural products from plants and other organic materials for years. **18**. Natural flavour molecules, such as vanilla, for instance, can be cleanly extracted from the pod using an SCF. **19**. More recently, though, chemists have turned to SCFs to dissolve reactants that usually need a toxic and flammable VOC or do not dissolve at all.

20. Synthetic chemists are using SCFs in the manufacture of new types of polymer and other molecules that could function as industrial catalysts, thus avoiding the use of harmful solvents. **21**. Joseph DeSimone's group at the University of North Carolina in Chapel Hill, for example, is using supercritical carbon dioxide to make new types of fluorine-containing polymer. **22**. Adding fluorine atoms to a polymer chain is used to make some tough, smooth and chemically inert materials. **24**. Modern fluoropolymers have more high-tech applications, such as acting as 'dry' lubricating layers for the moving parts in computers, eg hard drives, where a drop of oil would wreck the electronics. **25**. The problem with making these new fluoropolymers, however, is that fluorine atoms have a residual negative charge, which makes them polar so they dissolve best in water. **26**. This makes it difficult to process them further because any other chemicals added will usually be soluble only in organic solvents.

27. DeSimone's team has got around this problem by using supercritical carbon dioxide instead. **28**. The chemists can now control the length of the polymer chains and their precise chemical structure. **29**. This leads to consistent materials for high-tech. aerospace and electronic applications.

30. Martyn Poliakoff and his team at the University of Nottingham, meanwhile, are exploring how SCFs can help them make new industrial catalysts. **31**. They have discovered that they can make organometallic compounds such as metal carbonyls, many of which are too unstable to prepare by conventional methods. **32**. Metal carbonyls are used in various industrial reactions as catalysts for speeding up the production of simple materials such as formic acid and formaldehyde and more complex compounds, like pharmaceuticals and polymers. **33**. Carbonyl compounds in which nitrogen or hydrogen molecules have been substituted for a carbonyl group can catalyse more complex reactions still. **34**. For example, novel piano-stool shaped manganese carbonyls with an attached dihydrogen might be a useful polymerisation catalyst. **35**. The problem in making them is that hydrogen and nitrogen gases do not dissolve well in conventional organic solvents at room temperature so it is hard to add the atoms to the starting molecule. **36**. The Nottingham team, however, has found that hydrogen mixes very well with supercritical carbon dioxide at 80-100atmos, allowing the reaction to add hydrogen or nitrogen atoms as needed to the carbonyl compound.

37. Once the reaction is over, the SCF can be quickly recycled by releasing the pressure and trapping the carbon dioxide gas that escapes. **40**. SCFs avoid this problem [to become contaminated] because once they become a gas again they leave behind any impurities,

41. SCFs are also much less viscous than liquid solvents, so they flow more easily through a reaction system. **42**. They can also get into the smallest of crevices and pits inside the reactor system. **43**. By flushing the system with an SCF once a reaction is complete any impurities can be washed out, leaving the system pristine and ready to be used again.

44. But, what about SCFs making it easier to take medicines? **45**. Scientists are now using SCFs to help them make drugs that normally have to be injected work when taken by mouth instead. **46**. A collaborative team from the US, Canada and Norway has found they can make sub-microscopic particles of the immunosuppressant drug cyclosporin, which is used to prevent transplanted organ rejection, by preparing it in supercritical carbon dioxide and then blasting it into normal water by releasing the pressure.

2. 8. Texto 8: *A healthy spread*.

1. Cholesterol, an essential constituent of all cell membranes, forms part of the casing that protects nerve fibres and is a precursor in the production of vitamin D, steroid hormones and bile salts. **2**. However, too much cholesterol in the blood is associated with heart disease. **3**. While reducing elevated cholesterol levels cannot guarantee a healthy heart, scientists and doctors agree that it can reduce the risk of problems. **4**. Here we consider how this can be done through dietary considerations, by reducing the use of food components that raise cholesterol and by adding cholesterol-lowering ingredients – ie functional foods or 'nutraceuticals'.

5. Most of the cholesterol we need is manufactured in our liver, ca 600 mg day. **6**. Research suggests that if a healthy adult absorbs ca 80 mg day of cholesterol from foods such as animal products and eggs, the liver synthesises ca nine times as much (ca 720 mg day). **7**. Reducing cholesterol in our diet therefore has only a modest effect on lowering blood cholesterol levels. **8**. Scientists therefore considered which other components in food have a significant effect on cholesterol levels.

9. Cholesterol is insoluble in water and has to be carried around the blood stream as lipoproteins (ie all the insoluble lipid molecules in the body, attached to proteins). **10**. Different combinations of lipids and proteins produce complexes of different densities. **11**. Low density lipoproteins (LDLs), for example, supply cholesterol to cells, increased levels of which are associated with atherosclerosis - ie an accumulation of lipids in plaques on artery walls, which narrows the arteries and restricts the blood flow to the heart (ischaemia) and brain (stroke). **12**. In contrast, high density lipoproteins (HDLs) transport cholesterol away from artery walls and therefore act as cardio-protectors. **13**. To reduce the risk of heart disease, people therefore need to lower both their total cholesterol levels and their LDL-cholesterol levels in the plasma.

14. Dietary fats, both animal and vegetable, are made up of a mixture of triglycerides. **15**. They are the major food constituents known to have a significant effect on cholesterol levels. **16**. Animal fats, in butter for example, consist of a relatively high proportion of saturated fatty acids, some of which according to Judy Donnelly, nutritional biochemist at Trinity and All Saints University College Leeds, ‘increase the proportion of LDL-cholesterol in the blood, compared with HDL-cholesterol. **17**. Cutting down on the amount of saturated fatty acids we eat could therefore lower our risk of heart disease. **18**. In contrast, vegetable oils, such as those found in margarines, consist of long – chain polyunsaturated and monounsaturated fatty acids, which are associated with lowering LDL-cholesterol levels.

19. As people become more conscious of the benefits of cutting down excess intake of fats, especially saturated fats, spreads that contain <80 per cent fat are gaining in popularity. **20**. It is the saturated fatty acid content that makes butters and margarines solid so we can spread them. **21**. In lower fat spreads, fat substitutes are sometimes added to achieve the desired consistency and attributes. **22**. Sometimes the substitute is water (in butter-milk and skimmed milk with added salts and preservatives), but it may be that starch molecules or whey proteins, which have been processed to give the particles a uniform size and thus a smooth feel in the mouth, are added. **23**. Many of the resulting spreads, however, are not as popular with consumers because, for example, they lack the saturated fatty acids that give butter its distinctive flavour. **24**. To improve the acceptability of low fat spreads, researchers are investigating synthetic replacements to animal fats, or ‘structural fatitutes’. **25**. Such compounds provide many similar properties, such as taste and texture, but they are not digested or absorbed from the gut into the blood and therefore cannot raise LDL-cholesterol levels. **26**. They are used in the US in crisps and savoury products, but have not yet been added to fat spreads.

27. In the past few years the focus of research has shifted to adding ingredients (nutraceuticals) to food to reduce LDL-cholesterol levels. **28**. Since the early 1950s scientists have known that plant sterols, and their hydrogenated counterparts, stanols, have cholesterol-lowering properties. **29**. Unfortunately, these compounds are not naturally abundant in the food we eat. **30**. Over the years scientists have come to realise that these compounds are very effective at lowering LDL-cholesterol levels when sufficient is eaten, for example in rich fat spreads. **31**. Such products have recently been developed by esterifying the compounds with fatty acids to increase their fat solubility.

32. Two fat spreads – Benecol and Flora Proactive – are currently on the market for reducing LDL-cholesterol levels. **33**. Benecol contains plant stanol esters (sitostanol esters), and Flora Proactive contains sterol esters. **34**. Clinical trials, on people with elevated cholesterol levels, have shown that these products reduce total plama cholesterol levels and LDL-cholesterol levels by 8-13 per cent, without effecting HDL levels. **35**. Both products appear to have no adverse health effects and are non-toxic even in high doses, though a few people with the rare condition, phytosterolaemia cannot metabolise sterols and should avoid them.

36. According to Donnelly, there are two mechanisms by which these compounds are thought to lower cholesterol levels. **37**. 'Choresterol is not very soluble in the gut and its absorption is slow. **38**. Since you have other fats also being absorbed from the gut, cholesterol is one of the last to go through' she explained. **39**. 'Plant sterols and stanols have similar structures to cholesterol so they also get left behind. **40**. As the concentration of sterols/stanols increases, a threshold level is reached when the cholesterol molecules and the sterols/stanols coprecipitate into a solid crystalline form which cannot be absorbed by the gut' **41**. According to Donnelly, another possibility focuses on micelles, which are clusters of molecules that transport fats across the gut membrane. **42**. There is limited capacity for carrying cholesterol, and the plant sterols and stanols compete with cholesterol to get into the micelles, which limits the amount of cholesterol that can be absorbed. **43**. 'These mechanisms do not just reduce the absorption of dietary cholesterol', said Donnelly, 'but they also hinder reabsorption of some of the cholesterol produced by the body, which has been used in producing bile salts' **44**. Bile salts are used in the intestine to breakdown the fatty acids that we eat. **45**. Normally, the cholesterol in the bile salts would be recycled by re-absorption in the gut, but in this case they are excreted. **46**. Essentially more of the cholesterol produced has to go in to producing more bile salts, reducing the amounts in the blood plasma.

47. Cholesterol-lowering spreads are some of the first functional foods on the market, but scientists are continually identifying ingredients that have potential health benefits. **48**. As new advances in food technology allow their incorporation into products, we will see a lot more on the supermarket shelves. **49**. Although these products can be beneficial, Donnelly says that she hopes 'people do not begin to rely on them because they are not miracle cures and there are many other factors involved in heart disease, which these products do not address.

2. 8. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. cholesterol – cholesterol				
3	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. heart – heart **pc**. disease – healthy (**health**)			
4	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**d**. reduce…problems – this **a**. reducing – raise **rs**. cholesterol – cholesterol		
5	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. we – we+ **rs**. cholesterol – cholesterol	
6	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **pc**. disease – healthy (**health**)	**rs**. cholesterol – cholesterol **rs**. healthy – healthy **pc**. scientists – research (**researcher**)	**rs**. food – foods **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. liver – liver **rs**. ca – ca **rs**. mg – mg **rs**. day – day
7	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. blood – blood	**psm**. reducing – lowering **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. we – our+ **rc**. dietary – diet **rs**. reducing – reducing **a**. raise – lowering **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. our – our+
8	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. levels – levels **rs**. scientists – scientists	**rs**. considered – considered **rs**. food – food **rs**. components – components **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
9	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. blood – blood	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
10					
11	**rs**. cholesterol – cholesterol **rs**. cell – cells	**rs**. cholesterol – cholesterol **rs**. blood – blood **rs**. associated – associated **rs**. heart – heart **tr**. disease – ischaemia	**psm**. elevated – increased **rs**. cholesterol – cholesterol **rs**. levels – levels **tr**. healthy – ischaemia **rs**. heart – heart	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol

	1	2	3	4	5
12	**rs**. cholesterol – cholesterol **rc**. protects – protectors	**rs**. cholesterol – cholesterol **psm**. heart – cardio	**rs**. cholesterol – cholesterol **psm**. heart – cardio	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
13	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. heart – heart **rs**. disease – disease	**psm**. reducing – lower **rs**. cholesterol – cholesterol **rs**. levels – levels **pc**. healthy – disease (**health**) **rs**. heart – heart **rs**. reduce – reduce **rs**. risk – risk	**rs**. reducing – reducing* **a**. raise – lower* **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
14				**rs**. dietary – dietary	
15	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. food – food **psm**. components – constituents **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
16	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. blood – blood	**a**. reducing – increase **rs**. cholesterol – cholesterol	**psm**. raise – increase **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
17	**rs**. cholesterol – cholesterol	**rs**. heart – heart **rs**. disease – disease	**psm**. reducing – cutting down* **pc**. healthy – disease (**health**) **rs**. heart – heart **psm**. reduce – lower **rs**. risk – risk	**rs**. we – we+ **psm**. reducing – cutting down **rs**. lowering – lower*	**rs**. we – we+
18	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. associated – associated*	**psm**. reducing – lowering **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. lowering – lowering	**rs**. cholesterol – cholesterol
19			**psm**. reducing – cutting down* **a**. risk – benefits	**psm**. reducing – cutting down	
20				**rs**. we – we+ **psm**. components – content	**rs**. we – we+
21				**rs**. adding - added	

	1	2	3	4	5
22				**rs**. adding – added	
23					
24			**psm**. scientists – researchers		
25		**rs**. cholesterol – cholesterol **rs**. blood – blood	**a**. reducing – raise **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. raise – raise **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
26				**rs**. adding – added	
27	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. reducing – reduce **rs**. cholesterol – cholesterol **rs**. levels – levels **pc**. scientists – research (**researcher**)	**rs**. food – food **rs**. cholesterol – cholesterol **rs**. adding – adding **psm**. lowering – reduce **rs**. ingredients – ingredients **rs**. nutraceuticals – nutraceuticals	**rs**. cholesterol – cholesterol
28	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**psm**. reducing – lowering **rs**. cholesterol – cholesterol **rs**. scientists – scientists	**rs**. cholesterol – cholesterol **rs**. lowering – lowering	**rs**. cholesterol – cholesterol
29				**rs**. we – we+ **rs**. food – food	**rs**. we – we+
30	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**psm**. reducing – lowering **rs**. cholesterol – cholesterol **rs**. levels – levels **rs**. scientists – scientists	**rs**. cholesterol – cholesterol **rs**. lowering – lowering	**rs**. cholesterol – cholesterol
31					
32	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. reducing – reducing **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **psm**. lowering – reducing	**rs**. cholesterol – cholesterol
33					

	1	2	3	4	5
34	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. reducing – reduce **rs**. elevated – elevated **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **psm**. lowering – reduce	**rs**. cholesterol – cholesterol
35		**a**. disease – health	**rc**. healthy – health **tr**. risk – adverse		
36	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**psm**. reducing – lower **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. lowering – lower	**rs**. cholesterol – cholesterol
37	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
38	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
39	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
40	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
41					
42	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
43	**rs**. cholesterol – cholesterol **rc**. production – producing **rs**. bile – bile **rs**. salts – salts	**rs**. cholesterol – cholesterol	**rs**. reducing – reduce* **rs**. cholesterol – cholesterol	**rs**. dietary – dietary **rs**. cholesterol – cholesterol **psm**. lowering – reduce	**rs**. cholesterol – cholesterol
44	**rs**. bile – bile **rs**. salts – salts				**rs**. we – we+
45	**rs**. cholesterol – cholesterol **rs**. bile – bile **rs**. salts – salts	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
46	**rs**. cholesterol – cholesterol **rc**. production – producing **rs**. bile – bile **rs**. salts – salts	**rs**. cholesterol – cholesterol **rs**. blood – blood	**rs**. reducing – reducing **rs**. cholesterol – cholesterol	**rs**. reducing – reducing* **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **psm**. manufactured – produced

	1	2	3	4	5
47	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **a**. disease – health	**psm**. reducing – lowering **rs**. cholesterol – cholesterol **rc**. healthy – health **rs**. scientists – scientists **a**. risk – benefits	**rs**. cholesterol – cholesterol **rs**. lowering – lowering **rs**. ingredients – ingredients **rs**. functional – functional **rs**. foods – foods	**rs**. cholesterol – cholesterol
48				**rs**. we – we+ **pc**. adding – incorporation (**addition**) **rs**. foods – food	**rs**. we – we+
49		**psm**. associated – involved **rs**. heart – heart **rs**. disease – disease	**pc**. healthy – disease (**health**) **rs**. heart – heart **pc**. risk – beneficial (**benefit**)		

	6	7	8	9	10
7	**rs**. cholesterol – cholesterol				
8	**pc**. research – scientists (**researcher**) **rs**. cholesterol – cholesterol **rs**. foods – food	**a**. modest – significant **rs**. effect – effect **rs**. cholesterol – cholesterol **rs**. levels – levels			
9	**rs**. cholesterol – cholesterol	**rs**. blood – blood **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol		
10				**rs**. lipid – lipids **rs**. proteins – proteins	
11	**tr**. healthy – ischaemia **rs**. cholesterol – cholesterol	**a**. lowering – increased **rs**. blood – blood **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. blood – blood **rs**. lipoproteins – lipoproteins **rs**. lipid – lipids	**rs**. lipids – lipids **rc**. proteins – lipoproteins **rs**. densities – density
12	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **psm**. carried – transport **rs**. lipoproteins – lipoproteins	**rc**. proteins – lipoproteins **rs**. densities – density
13	**pc**. healthy – disease (**health**) **hip**. adult – people **rs**. cholesterol – cholesterol	**rs**. reducing – reduce* **rs**. lowering – lower **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol	
14	**rs**. animal – animal	**rc**. diet – dietary			
15	**rs**. cholesterol – cholesterol **rs**. foods – food	**a**. modest – significant **rs**. effect – effect **rs**. cholesterol – cholesterol **rs**. levels – levels	**psm**. components – constituents **rs**. food – food **rs**. have – have **rs**. significant – significant **rs**. effect – effect **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol	
16	**rs**. cholesterol – cholesterol **rs**. animal – animal	**a**. lowering – increase **rs**. blood – blood **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. blood – blood	

	6	7	8	9	10
17	**pc**. healthy – disease (**health**)	**psm**. reducing – cutting down **rs**. our – our* **rs**. lowering – lower*			
18	**rs**. cholesterol – cholesterol	**rs**. lowering – lowering **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol	
19	**hip**. adult – people	**psm**. reducing – cutting down			
20		**rs**. we – we+	**psm**. components – content		
21					
22					
23	**tr**. adult – consumers				
24	**rc**. research – researchers **rs**. animal – animal		**psm**. scientists – researchers		
25	**rs**. absorbs – absorbed **rs**. cholesterol – cholesterol	**a**. lowering – raise **rs**. blood – blood **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. blood – blood	
26	**rs**. products – products				
27	**rc**. research – research **rs**. cholesterol – cholesterol **rs**. foods – food	**psm**. lowering – reduce **rs**. cholesterol – cholesterol **rs**. levels – levels	**pc**. scientists – research (**researcher**) **rs**. food – food **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol	
28	**pc**. research – scientists (**researcher**) **rs**. cholesterol – cholesterol	**rs**. lowering – lowering **rs**. cholesterol – cholesterol	**rs**. scientists – scientists **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	
29	**rs**. foods – food	**rs**. our – we+	**rs**. food – food		

	6	7	8	9	10
30	**pc**. research – scientists (**researcher**) **rs**. cholesterol – cholesterol **rs**. cholesterol – cholesterol	**rc**. effect – effective **rs**. lowering – lowering **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. scientists – scientists **rc**. effect – effective **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol	
31					
32	**rs**. cholesterol – cholesterol	**psm**. lowering – reducing **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol	
33					
34	**hip**. adult – people **rs**. cholesterol – cholesterol	**psm**. lowering – reduce **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol	
35	**hip**. adult – people	**rs**. effect – effects*	**rs**. effect – effects*		
36	**rs**. cholesterol – cholesterol	**rs**. lowering – lower **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol	
37	**rc**. absorbs – absorption **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rc**. insoluble – soluble	
38	**rs**. absorbs – absorbed **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	
39	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	
40	**rs**. absorbs – absorbed **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	
41					
42	**rs**. absorbs – absorbed **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. carried – carrying	
43	**rc**. absorbs – absorption **rs**. cholesterol – cholesterol	**rs**. reducing – reduce **rc**. diet – dietary **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	

	6	7	8	9	10
44		**rs**. our – we+			
45	**rc**. absorbs – re-absorption **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	
46	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **psm**. lowering – reducing **rs**. blood – blood	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. blood – blood	
47	**pc**. research – scientists (**researcher**) **rc**. healthy – health **rs**. cholesterol – cholesterol **rs**. foods – foods	**rs**. lowering – lowering **rs**. cholesterol – cholesterol	**rs**. scientists – scientists **rs**. food – foods **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	
48	**rs**. foods – food **rs**. products – products	**rs**. our – we+	**rs**. food – food		
49	**pc**. healthy – disease (**health**) **hip**. adult – people **rs**. products – products				

	11	12	13	14	15
12	**a**. low – high **rs**. density – density **rs**. lipoproteins – lipoproteins **rs**. cholesterol – cholesterol **rs**. artery – artery **rs**. walls – walls **psm**. heart – cardio				
13	**rs**. LDLs – LDL **rs**. cholesterol – cholesterol **a**. increased – lower **rs**. levels – levels **rs**. heart – heart **hip**. ischaemia – disease	**rs**. cholesterol – cholesterol **psm**. cardio – heart			
14					
15	**rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. levels – levels	**s**. triglycerides – they	
16	**rs**. LDLs – LDL **rs**. cholesterol – cholesterol **rs**. increased – increase **rs**. blood – blood	**rs**. HDLs – HDL **rs**. cholesterol – cholesterol	**a**. lower – increase **rs**. LDL – LDL **rs**. cholesterol – cholesterol	**rs**. fats – fats **rs**. animal – animal **psm**. made up of – consist of	**rs**. cholesterol – cholesterol
17	**a**. increased – lower* **rs**. heart – heart **hip**. ischaemia – disease	**psm**. cardio – heart	**psm**. reduce – lower **rs**. risk – risk **rs**. heart – heart **rs**. disease – disease **psm**. lower – cutting down*	**rc**. fats – fatty	
18	**rs**. LDLs – LDL **rs**. cholesterol – cholesterol **a**. increased – lowering **rs**. levels – levels **rs**. associated – associated*	**rs**. cholesterol – cholesterol	**rs**. lower – lowering **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels	**rc**. fats – fatty **rs**. vegetable – vegetable **psm**. made up of – consist of	**rs**. cholesterol – cholesterol **rs**. levels – levels
19	**a**. increased – cutting down*		**a**. risk – benefits **rs**. people – people **psm**. lower – cutting down*	**rs**. fats – fats	
20				**rc**. fats – fatty	**psm**. constituents – content
21				**rs**. fats – fat	
22					

	11	12	13	14	15
23			**tr**. people – consumers	**rc**. fats – fatty	
24				**rs**. fats – fats **rs**.- animal – animal	
25	**rs**. LDLs – LDL **rs**. cholesterol – cholesterol **psm**. increased – raise **rs**. levels – levels **rs**. blood – blood	**rs**. cholesterol – cholesterol	**a**. lower – raise **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels		**rs**. cholesterol – cholesterol **rs**. levels – levels
26				**rs**. fats – fat	
27	**rs**. LDLs – LDL **rs**. cholesterol – cholesterol **a**. increased – reduce **rs**. levels – levels	**rs**. cholesterol – cholesterol	**psm**. lower – reduce **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels		**rs**. cholesterol – cholesterol **rs**. levels – levels
28	**rs**. cholesterol – cholesterol **a**. increased – lowering	**rs**. cholesterol – cholesterol	**rs**. lower – lowering **rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol
29					**rs**. food – food
30	**rs**. LDLs – LDL **rs**. cholesterol – cholesterol **a**. increased – lowering **rs**. levels – levels	**rs**. cholesterol – cholesterol	**rs**. lower – lowering **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. fats – fat	**rc**. effect – effective **rs**. cholesterol – cholesterol **rs**. levels – levels
31				**rs**. fats – fat	
32	**rs**. LDLs – LDL **rs**. cholesterol – cholesterol **a**. increased – reducing **rs**. levels – levels	**rs**. cholesterol – cholesterol	**psm**. lower – reducing **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. fats – fat	**rs**. cholesterol – cholesterol **rs**. levels – levels
33					
34	**rs**. LDLs – LDL **rs**. cholesterol – cholesterol **psm**. increased – elevated **rs**. levels – levels	**rs**. HDLs – HDL **rs**. cholesterol – cholesterol	**rs**. people – people **psm**. lower – reduce **rs**. total – total **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels **rs**. plasma – plasma		**rs**. cholesterol – cholesterol **rs**. levels – levels
35	**tr**. ischaemia – health		**tr**. risk – adverse **a**. disease – health **rs**. people – people		**rs**. effect – effects*

	11	12	13	14	15
36	**rs**. cholesterol – cholesterol **a**. increased – lower **rs**. levels – levels	**rs**. cholesterol – cholesterol	**rs**. lower – lower **rs**. cholesterol – cholesterol **rs**. levels – levels		**rs**. cholesterol – cholesterol **rs**. levels – levels
37	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol
38	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. fats – fats	**rs**. cholesterol – cholesterol
39	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol
40	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol
41				**rs**. fats – fats	
42	**rs**. cholesterol – cholesterol	**psm**. transport – carrying **rs**. cholesterol –cholesterol	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol
43	**rs**. cholesterol – cholesterol **a**. increased – reduce*	**rs**. cholesterol – cholesterol	**psm**. lower – reduce **rs**. cholesterol – cholesterol	**rs**. dietary – dietary	**rs**. cholesterol – cholesterol
44				**rc**. fats – fatty	
45	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol
46	**rs**. cholesterol – cholesterol **a**. increased – reducing* **rs**. blood – blood	**rs**. cholesterol – cholesterol	**psm**. lower – reducing **rs**. cholesterol – cholesterol **rs**. plasma – plasma		**rs**. cholesterol – cholesterol
47	**rs**. cholesterol – cholesterol **a**. increased – lowering*	**rs**. cholesterol – cholesterol	**a**. risk – benefits **a**. disease – health **rs**. lower – lowering **rs**. cholesterol – cholesterol		**rs**. food – foods **rs**. cholesterol – cholesterol
48					**rs**. food – food
49	**rs**. heart – heart **hip**. ischaemia – disease	**psm**. cardio – heart	**pc**. risk – beneficial **(benefit)** **rs**. heart – heart **rs**. disease – disease **rs**. people – people		

	16	17	18	19	20
17	**rs**. saturated – saturated **rs**. fatty – fatty **rs**. acids – acids **a**. increase – lower*				
18	**rs**. consist – consist **rc**. saturated – polyunsaturated **rs**. fatty – fatty **rs**. acids – acids **a**. increase – lowering **rs**. LDL – LDL **rs**. cholesterol – cholesterol	**rc**. saturated – polyunsaturated **rs**. fatty – fatty **rs**. acids – acids **rs**. lower – lowering*			
19	**rs**. saturated – saturated **rs**. fats – fats **a**. increase – cutting down*	**rs**. cutting down – cutting down **rs**. saturated – saturated **rc**. fatty – fats **a**. risk – benefits	**rc**. polyunsaturated – saturated **rc**. fatty – fats **psm**. lowering – cutting down*		
20	**rs**. butter - butters **rs**. saturated – saturated **rs**. fatty – fatty **rs**. acids – acid	**rs**. saturated – saturated **rs**. fatty – fatty **rs**. acids – acid **rs**. we – we+	**rs**. margarines – margarines **rc**. polyunsaturated – saturated **rs**. fatty – fatty **rs**. acids – acid	**rs**. saturated – saturated **rc**. fats – fatty **rc**. spreads – spread	
21	**rs**. fats – fat	**rc**. fatty – fat	**rc**. fatty – fat	**rs**. fats – fat **rs**. spreads – spreads	**rc**. fatty – fat
22	**rs**. butter – butter				**rs**. butters – butter
23	**rs**. butter - butter **rs**. saturated – saturated **rs**. fatty – fatty **rs**. acids – acids	**rs**. saturated – saturated **rs**. fatty – fatty **rs**. acids – acids	**rc**. polyunsaturated – saturated **rs**. fatty – fatty **rs**. acids – acids	**tr**. people – consumers **rs**. saturated – saturated **rc**. fats – fatty **rs**. spreads – spreads **rc**. popularity – popular	**rs**. saturated – saturated **rs**. fatty – fatty **rs**. acid – acids **rs**. butters – butter
24	**rs**. animal – animal **rs**. fats – fats	**rc**. fatty – fat	**rc**. fatty – fat	**rs**. fats – fat **rs**. spreads – spreads **psm**. popularity - acceptability	**rc**. fatty – fat
25	**psm**. increase – raise **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. blood – blood	**a**. lower – raise*	**a**. lowering – raise **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels	**a**. cutting down – raise*	

	16	17	18	19	20
26	**rs**. fats – fat	**rc**. fatty – fat	**rc**. fatty – fat	**rs**. fats – fat **rs**. spreads – spreads	**rc**. fatty – fat
27	**a**. increase – reduce **rs**. LDL – LDL **rs**. cholesterol – cholesterol	**psm**. lower – reduce*	**psm**. lowering – reduce **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels	**psm**. cutting down – reduce*	
28	**a**. increase – lowering **rs**. cholesterol – cholesterol	**rs**. lower – lowering*	**rs**. lowering – lowering **rs**. cholesterol – cholesterol	**psm**. cutting down – lowering*	
29		**rs**. we – we+ **rs**. eat – eat			**rs**. we – we+
30	**rs**. fats – fat **a**. increase – lowering **rs**. LDL – LDL **rs**. cholesterol – cholesterol	**rc**. fatty – fat **rs**. eat – eaten **rs**. lower – lowering*	**rc**. fatty – fat **rs**. lowering – lowering **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels	**psm**. cutting down – lowering* **rs**. fats – fat **rs**. spreads – spreads	**rc**. fatty – fat
31	**rs**. fatty – fatty **rs**. acids – acids	**rs**. fatty – fatty **rs**. acids – acids	**rs**. fatty – fatty **rs**. acids – acids	**rs**. fats – fat **hip**. spreads – products	**rs**. fatty – fatty **rs**. acid – acids
32	**rs**. fats – fat **a**. increase – reducing **rs**. LDL – LDL **rs**. cholesterol – cholesterol	**rc**. fatty – fat **psm**. lower – reducing*	**rc**. fatty – fat **psm**. lowering – reducing **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels	**psm**. cutting down – reducing* **rs**. fats – fat **rs**. spreads – spreads	**rc**. fatty – fat
33				**rs**. contain – contains	
34	**a**. increase – reduce **rs**. LDL – LDL **rs**. cholesterol – cholesterol	**psm**. lower – reduce*	**psm**. lowering – reduce **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels	**rs**. people – people **psm**. cutting down – reduce*	
35		**tr**. risk – adverse **a**. disease – health		**rs**. people – people	
36	**rs**. Donnelly – Donnelly **a**. increase – lower **rs**. cholesterol – cholesterol	**rs**. lower – lower*	**rs**. lowering – lower **rs**. cholesterol – cholesterol **rs**. levels – levels	**psm**. cutting down – lower*	

	16	17	18	19	20
37	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol		
38	**rs**. fats – fats **s**. Donnelly – she **rs**. cholesterol – cholesterol	**rc**. fatty – fats	**rc**. fatty – fats **rs**. cholesterol – cholesterol	**rs**. fats – fats	**rc**. fatty – fats
39	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol		
40	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol		
41	**rs**. fats – fats **rs**. Donnelly – Donnelly	**rc**. fatty – fats	**rc**. fatty – fats	**rs**. fats – fats	**rc**. fatty – fats
42	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol		
43	**rs**. Donnelly – Donnelly **a**. increase – reduce **rs**. cholesterol – cholesterol	**psm**. lower – reduce*	**psm**. lowering– reduce **rs**. cholesterol – cholesterol	**psm**. cutting down – reduce*	
44	**rs**. fatty – fatty **rs**. acids – acids	**rs**. fatty – fatty **rs**. acids – acids **rs**. we – we+ **rs**. eat – eat	**rs**. fatty – fatty **rs**. acids – acids	**rc**. fats – fatty	**rs**. fatty – fatty **rs**. acid – acids **rs**. we – we+
45	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol		
46	**a**. increase – reducing **rs**. cholesterol – cholesterol **rs**. blood – blood	**psm**. lower – reducing*	**psm**. lowering – reducing **rs**. cholesterol – cholesterol	**psm**. cutting down – reducing*	
47	**hip**. butter - foods **a**. increase – lowering **rs**. cholesterol – cholesterol	**rs**. lower – lowering* **a**. risk – benefits **a**. disease – health	**hip**. margarines – foods **rs**. lowering – lowering **rs**. cholesterol – cholesterol	**psm**. cutting down – lowering* **rs**. spreads – spreads	
48		**rs**. we – we+			**rs**. we – we+
49	**rs**. Donnelly – Donnelly	**pc**. risk – beneficial (**benefit**) **rs**. heart – heart **rs**. disease – disease		**rs**. people – people	

	21	22	23	24	25
22	**rs**. substitutes – substitute **rs**. added – added				
23	**rc**. fat – fatty **rs**. spreads – spreads	**rs**. butter – butter **rs**. give – give			
24	**rc**. lower – low **rs**. fat – fat **rs**. spreads – spreads **psm**. substitutes – replacements	**psm**. substitute – replacements	**rs**. spreads – spreads **pc**. popular – acceptability **(popularity)** **a**. saturated – low **rc**. fatty – fat		
25	**psm**. attributes – properties	**psm**. give – provide	**psm**. give – provide **psm**. flavour – taste	**hip**. structural fatitutes – compounds	
26	**rs**. fat – fat **rs**. spreads – spreads **rs**. added – added	**rs**. added – added	**rs**. spreads – spreads **rc**. fatty – fat **pc**. flavour – savoury **(flavourful)**	**rs**. fat – fat **rs**. spreads – spreads **s**. structural fatitutes – they	**s**. compounds – they **pc**. taste – savoury **(tasty)**
27	**psm**. substitutes – ingredients **rs**. added – adding	**psm**. substitute – ingredients **rs**. added – adding		**rc**. researchers – research **psm**. replacements – ingredients	**a**. raise – reduce **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels
28				**psm**. researchers – scientists	**a**. raise – lowering **rs**. cholesterol – cholesterol
29					
30	**rs**. fat – fat **rs**. spreads – spreads		**rs**. spreads – spreads **rc**. fatty – fat	**a**. low – rich **rs**. fat – fat **rs**. spreads – spreads **psm**. researchers – scientists	**a**. raise – lowering **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels
31	**rs**. fat – fat **hip**. spreads – products		**hip**. spreads – products **rs**. fatty – fatty **rs**. acids – acids	**rs**. fat – fat **hip**. spreads – products	
32	**rs**. fat – fat **rs**. spreads – spreads		**rs**. spreads – spreads **rc**. fatty – fat	**rs**. fat – fat **rs**. spreads – spreads	**a**. raise – reducing **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels
33					

	21	22	23	24	25
34			**hip**. consumers – people		**a**. raise – reduce **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels
35			**hip**. consumers – people		
36					**a**. raise – lower **rs**. cholesterol – cholesterol **rs**. levels – levels
37					**rc**. absorbed – absorption **rs**. gut – gut **rs**. cholesterol – cholesterol
38	**rs**. fat – fats		**rc**. fatty – fats	**rs**. fat – fats	**rs**. absorbed – absorbed **rs**. gut – gut **rs**. cholesterol – cholesterol
39					**rs**. cholesterol – cholesterol
40					**rs**. absorbed – absorbed **rs**. gut – gut **rs**. cholesterol – cholesterol
41	**rs**. fat – fats		**rc**. fatty – fats	**rs**. fat – fats	**rs**. gut – gut
42					**rs**. absorbed – absorbed **rs**. cholesterol – cholesterol
43					**rc**. absorbed – absorption **a**. raise – reduce **rs**. cholesterol – cholesterol
44	**rc**. fat – fatty		**rs**. fatty – fatty **rs**. acids – acids	**rc**. fat – fatty	**psm**. gut – intestine
45					**rc**. absorbed – re-absorption **rs**. gut – gut **rs**. cholesterol – cholesterol
46					**a**. raise – reducing **rs**. cholesterol – cholesterol
47	**rs**. spreads – spreads **psm**. substitutes – ingredients	**psm**. substitutes– ingredients	**rs**. spreads – spreads	**rs**. spreads – spreads **psm**. researchers – scientists **psm**. replacements – ingredients	**hip**. compounds – ingredients **a**. raise – lowering **rs**. cholesterol – cholesterol
48	**pc**. added – incorporation (**addition**)	**pc**. added – incorporation (**addition**)			
49			**hip**. consumers – people		

	26	27	28	29	30
27	**rs**. added – adding				
28		**pc**. research – scientists (**researcher**) **psm**. reduce – lowering **rs**. cholesterol – cholesterol			
29		**rs**. food – food	**hip**. sterols/stanols – compounds		
30	**rs**. fat – fat **rs**. spreads – spreads	**pc**. research – scientists (**researcher**) **psm**. reduce – lowering **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. level – levels	**rs**. scientists – scientists **hip**. sterols/stanols – compounds **rs**. cholesterol – cholesterol **rs**. lowering – lowering	**rs**. compounds – compounds **rs**. eat – eaten	
31	**rs**. fat – fat **hip**. spreads – products		**hip**. sterols/stanols – compounds	**rs**. compounds – compounds	**rs**. compounds – compounds **rs**. fat – fat **hip**. spreads – products
32	**rs**. fat – fat **rs**. spreads – spreads	**rs**. reduce – reducing **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. level – levels	**rs**. cholesterol – cholesterol **psm**. lowering – reducing		**psm**. lowering – reducing **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels **rs**. fat – fat **rs**. spreads – spreads
33			**rs**. plant – plant **rs**. sterols – sterol **rs**. stanols – stanol	**hip**. compounds – stanol/sterol	**hip**. compounds – stanol/sterol
34		**rs**. reduce – reduce **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. level – levels	**rs**. cholesterol – cholesterol **psm**. lowering – reduce		**psm**. lowering – reduce **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels
35			**rs**. sterols – sterols	**tr**. compounds – sterols	**tr**. compounds – sterols
36		**psm**. reduce – lower **rs**. cholesterol – cholesterol **rs**. level – levels	**hip**. sterols/stanols – compounds **rs**. cholesterol – cholesterol **rs**. lowering – lower	**rs**. compounds – compounds	**rs**. compounds – compounds **rs**. lowering – lower **rs**. cholesterol – cholesterol **rs**. levels – levels
37		**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol

	26	27	28	29	30
38	**rs**. fat – fats	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol **rs**. fat – fats
39		**rs**. cholesterol – cholesterol	**rs**. plant – plant **rs**. sterols – sterols **rs**. stanols – stanols **rs**. cholesterol – cholesterol	**hip**. compounds – sterols/stanols	**hip**. compounds – sterols/stanols **rs**. cholesterol – cholesterol
40		**rs**. cholesterol – cholesterol	**rs**. sterols – sterols **rs**. stanols – stanols **rs**. cholesterol – cholesterol	**hip**. compounds – sterols/stanols	**hip**. compounds – sterols/stanols **rs**. cholesterol – cholesterol
41	**rs**. fat – fats				**rs**. fat – fats
42		**rs**. cholesterol – cholesterol	**rs**. plant – plant **rs**. sterols – sterols **rs**. stanols – stanols **rs**. cholesterol – cholesterol	**hip**. compounds – sterols/stanols	**hip**. compounds – sterols/stanols **rs**. cholesterol – cholesterol
43		**rs**. reduce – reduce **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. lowering – reduce		**psm**. lowering – reduce **rs**. cholesterol – cholesterol
44	**rc**. fat – fatty			**rs**. we – we+ **rs**. eat – eat	**rs**. eaten – eat **rc**. fat – fatty
45			**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol
46		**rs**. reduce – reducing **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **psm**. lowering – reducing		**psm**. lowering – reducing **rs**. cholesterol – cholesterol
47		**pc**. research – scientists (**researcher**) **rs**. ingredients – ingredients **rs**. food – foods **psm**. reduce – lowering **rs**. cholesterol – cholesterol	**rs**. scientists – scientists **rs**. cholesterol – cholesterol **rs**. lowering – lowering	**rs**. food – foods	**rs**. scientists – scientists **rs**. lowering – lowering **rs**. cholesterol – cholesterol **rs**. spreads – spreads
48	**rs**. products – products **pc**. added – incorporation (**addition**)	**pc**. adding – incorporation (**addition**) **s**. ingredients – their **rs**. food – food		**rs**. food – food **rs**. we – we+	
49	**rs**. products – products				

	31	32	33	34	35
32	**tr**. products – spreads **rs**. fat – fat				
33		**rs**. Benecol – Benecol **rs**. Flora – Flora **rs**. Proactive – Proactive			
34	**rs**. products – products	**hip**. Benecol and Flora Proactive – products **rs**. reducing – reduce **rs**. LDL – LDL **rs**. cholesterol – cholesterol **rs**. levels – levels	**hip**. Benecol and Flora Proactive – products		
35	**rs**. products – products	**hip**. Benecol and Flora Proactive – products	**hip**. Benecol and Flora Proactive – products **rs**. sterol – sterols	**rs**. people – people **rs**. products – products	
36	**rs**. compounds – compounds	**psm**. reducing – lower **rs**. cholesterol – cholesterol **rs**. levels – levels	**hip**. stanol/sterol – compounds	**pc**. reduce – lower **rs**. cholesterol – cholesterol **rs**. levels – levels	**hip**. sterols – compounds
37		**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol	
38	**rs**. fat – fats	**rs**. fat – fats **rs**. cholesterol – cholesterol			
39	**hip**. compounds – sterols and stanols	**rs**. cholesterol – cholesterol	**rs**. plant – plant **rs**. stanol – stanols **rs**. sterol – sterols	**rs**. cholesterol – cholesterol	**rs**. sterols – sterols
40	**hip**. compounds – sterols and stanols	**rs**. cholesterol – cholesterol	**rs**. stanol – stanols **rs**. sterol – sterols	**rs**. cholesterol – cholesterol	**rs**. sterols – sterols
41	**rs**. fat – fats	**rs**. fat – fats			
42	**hip**. compounds – sterols and stanols	**rs**. cholesterol – cholesterol	**rs**. plant – plant **rs**. stanol – stanols **rs**. sterol – sterols	**rs**. cholesterol – cholesterol	**rs**. sterols – sterols
43		**rs**. reducing – reduce **rs**. cholesterol – cholesterol		**rs**. reduce – reduce **rs**. cholesterol – cholesterol	

	31	32	33	34	35
44	**rs**. fatty – fatty **rs**. acids – acids	**rc**. fat – fatty			
45		**rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol	
46		**rs**. reducing – reducing **rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol **rs**. reduce – reducing **rs**. plasma – plasma	
47	**tr**. products – spreads	**rs**. spreads – spreads **rs**. market – market **psm**. reducing – lowering **rs**. cholesterol – cholesterol		**rs**. cholesterol – cholesterol **tr**. products – spreads **psm**. reduce – lowering	**tr**. products – spreads **rs**. have – have **pc**. adverse – benefits (**adversity**) **rs**. health – health
48		**rc**. market – supermarket			
49				**rs**. people – people	**tr**. adverse – beneficial **rs**. people – people

	36	37	38	39	40
37	**rs**. cholesterol – cholesterol				
38	**s**. Donnelly – she **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. gut – gut **rc**. absorption – absorbed			
39	**hip**. compounds – sterols and stanols **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol		
40	**hip**. compounds – sterols and stanols **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. gut – gut **rc**. absorption – absorbed	**rs**. absorbed– absorbed **rs**. gut – gut **rs**. cholesterol – cholesterol	**rs**. sterols – sterols **rs**. stanols – stanols **rs**. cholesterol – cholesterol	
41	**rs**. Donnelly – Donnelly	**rs**. gut – gut	**rs**. fats – fats **rs**. gut – gut		**rs**. gut – gut
42	**hip**. compounds – sterols and stanols **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rc**. absorption – absorbed	**rs**. absorbed– absorbed **rs**. cholesterol – cholesterol	**rs**. plant – plant **rs**. sterols – sterols **rs**. stanols – stanols **rs**. cholesterol – cholesterol	**rs**. sterols – sterols **rs**. stanols – stanols **rs**. cholesterol – cholesterol **rs**. cannot – can **rs**. absorbed– absorbed
43	**rs**. Donnelly – Donnelly **rs**. mechanisms – mechanisms **psm**. lower – reduce **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. absorption – absorption	**rc**. absorbed – absorption **rs**. cholesterol – cholesterol **rs**. explained – said	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rc**. absorbed – absorption
44		**psm** gut – intestine	**rc**. fats – fatty **psm** gut – intestine		**psm** gut – intestine
45	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rs**. gut – gut **rc**. absorption – re-absorption	**rc**. absorbed – re-absorption **rs**. gut – gut **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **rc**. absorbed – re-absorption **rs**. gut – gut
46	**psm**. lower – reducing **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol

	36	37	38	39	40
47	**rs**. lower – lowering **rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol
48					
49	**rs**. Donnelly – Donnelly		**rs**. she – she **psm**. explained – says		

	41	42	43	44
42	**rs**. micelles – micelles **psm**. transport – carrying			
43	**rs**. Donnelly – Donnelly	**rs**. cholesterol – cholesterol **psm**. limits – hinder **rc**. absorbed – re-absorption		
44	**rc**. fats – fatty **psm**. gut – intestine		**rs**. bile – bile **rs**. salts – salts	
45	**rs**. gut – gut	**rs**. cholesterol – cholesterol **rc**. absorbed – re-absorption	**rs**. cholesterol – cholesterol **rs**. re-absorption – re-absorption **rs**. bile – bile **rs**. salts – salts	**rs**. bile – bile **rs**. salts – salts **psm**. intestine – gut
46		**rs**. cholesterol – cholesterol **rs**. amount – amounts	**rs**. reduce – reducing **rs**. cholesterol – cholesterol **rs**. produced – produced **rs**. producing – producing **rs**. bile – bile **rs**. salts – salts	**rs**. bile – bile **rs**. salts – salts
47		**rs**. cholesterol – cholesterol	**psm**. reduce – lowering **rs**. cholesterol – cholesterol	
48				**rs**. we – we+
49	**rs**. Donnelly – Donnelly		**rs**. said – says **rs**. Donnelly – Donnelly	

	45	46	47	48
46	**rs**. cholesterol – cholesterol **rs**. bile – bile **rs**. salts – salts			
47	**rs**. cholesterol – cholesterol	**rs**. cholesterol – cholesterol **psm**. reducing – lowering		
48			**rs**. foods – food **rc**. market – supermarket **s**. ingredients – their	
49			**rc**. benefits – beneficial	**rs**. products – products

2. 8. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11
2	1										
3	1	3									
4	1	1	3								
5	1	1	1	1(2)							
6	1	2	3	2	5						
7	1	2	3	4(5)	1(2)	1					
8	1	1	3	4	1	3	4				
9	1	2	1	1	1	1	2	1			
10	0	0	0	0	0	0	0	0	2		
11	2	5	5	1	1	2	4	2	4	3	
12	2	2	2	1	1	1	1	1	3	2	7
13	1	3	7	1(3)	1	3	3(4)	2	1	0	6
14	0	0	0	1	0	1	1	0	0	0	0
15	1	1	2	3	1	2	4	7	1	0	2
16	1	2	2	2	1	2	3	1	2	0	4
17	1	2	4(5)	1(3)	0(1)	1	1(3)	0	0	0	2(3)
18	1	1(2)	3	2	1	1	3	2	1	0	4(5)
19	0	0	1(2)	1	0	1	1	0	0	0	0(1)
20	0	0	0	1(2)	0(1)	0	0(1)	1	0	0	0
21	0	0	0	1	0	0	0	0	0	0	0
22	0	0	0	1	0	0	0	0	0	0	0

	1	2	3	4	5	6	7	8	9	10	11
23	0	0	0	0	0	1	0	0	0	0	0
24	0	0	1	0	0	2	0	1	0	0	0
25	0	2	3	2	1	2	4	2	2	0	5
26	0	0	0	1	0	1	0	0	0	0	0
27	1	1	4	6	1	3	3	4	1	0	4
28	1	1	3	2	1	2	2	2	1	0	2
29	0	0	0	1(2)	0(1)	1	0(1)	1	0	0	0
30	1	1	4	2	1	3	4	4	1	0	4
31	0	0	0	0	0	0	0	0	0	0	0
32	1	1	3	2	1	1	3	2	1	0	4
33	0	0	0	0	0	0	0	0	0	0	0
34	1	1	4	2	1	2	3	2	1	0	4
35	0	1	2	0	0	1	0(1)	0(1)	0	0	1
36	1	1	3	2	1	1	3	2	1	0	3
37	1	1	1	1	1	2	1	1	2	0	1
38	1	1	1	1	1	2	1	1	1	0	1
39	1	1	1	1	1	1	1	1	1	0	1
40	1	1	1	1	1	2	1	1	1	0	1
41	0	0	0	0	0	0	0	0	0	0	0
42	1	1	1	1	1	2	1	1	2	0	1
43	4	1	1(2)	3	1	2	3	1	1	0	1(2)
44	2	0	0	0	0(1)	0	0(1)	0	0	0	0

	1	2	3	4	5	6	7	8	9	10	11
45	3	1	1	1	1	2	1	1	1	0	1
46	4	2	2	1(2)	2	1	3	1	2	0	2(3)
47	1	2	5	5	1	4	2	3	1	0	1(2)
48	0	0	0	2(3)	0(1)	2	0(1)	1	0	0	0
49	0	3	3	0	0	3	0	0	0	0	2

	12	13	14	15	16	17	18	19	20	21	22
13	2										
14	0	0									
15	1	2	1								
16	2	3	3	1							
17	1	4(5)	1	0	3(4)						
18	1	4	3	2	7	3(4)					
19	0	2(3)	1	0	2(3)	4	2(3)				
20	0	0	1	1	4	3(4)	4	3			
21	0	0	1	0	1	1	1	2	1		
22	0	0	0	0	1	0	0	0	1	2	
23	0	1	1	0	4	3	3	5	4	2	2
24	0	0	2	0	2	1	1	3	1	4	1
25	1	4	0	2	4	0(1)	4	0(1)	0	1	1
26	0	0	1	0	1	1	1	2	1	3	1
27	1	4	0	2	3	0(1)	4	0(1)	0	2	2
28	1	2	0	1	2	0(1)	2	0(1)	0	0	0
29	0	0	0	1	0	1(2)	0	0	0(1)	0	0
30	1	4	1	3	4	2(3)	5	2(3)	1	2	0
31	0	0	1	0	2	2	2	2	2	2	0
32	1	4	1	2	4	1(2)	5	2(3)	1	2	0
33	0	0	0	0	0	0	0	1	0	0	0
34	2	7	0	2	3	0(1)	4	1(2)	0	0	0

	12	13	14	15	16	17	18	19	20	21	22
35	0	3	0	0(1)	0	2	0	1	0	0	0
36	1	3	0	2	3	0(1)	3	0(1)	0	0	0
37	1	1	0	1	1	0	1	0	0	0	0
38	1	1	1	1	3	1	2	1	1	1	0
39	1	1	0	1	1	0	1	0	0	0	0
40	1	1	0	1	1	0	1	0	0	0	0
41	0	0	1	0	2	1	1	1	1	1	0
42	2	1	0	1	1	0	1	0	0	0	0
43	1	2	1	1	3	0(1)	2	0(1)	0	0	0
44	0	0	1	0	2	3(4)	2	1	2(3)	1	0
45	1	1	0	1	1	0	1	0	0	0	0
46	1	3	0	1	3	0(1)	2	0(1)	0	0	0
47	1	4	0	2	3	2(3)	3	1(2)	0	2	1
48	0	0	0	1	0	0(1)	0	0	0(1)	1	1
49	1	4	0	0	1	3	0	1	0	0	0

	23	24	25	26	27	28	29	30	31	32	33
24	4										
25	2	1									
26	3	3	2								
27	0	2	4	1							
28	0	1	2	0	3						
29	0	0	0	0	1	1					
30	2	4	4	2	5	4	2				
31	3	2	0	2	0	1	1	3			
32	2	2	4	2	4	2	0	6	2		
33	0	0	0	0	0	3	1	1	0	3	
34	1	0	4	0	4	2	0	4	1	5	1
35	1	0	0	0	0	1	1	1	1	1	2
36	0	0	3	0	3	3	1	4	1	3	1
37	0	0	3	0	1	1	0	1	0	1	0
38	1	1	3	1	1	1	0	2	1	2	0
39	0	0	1	0	1	4	1	2	1	1	3
40	0	0	3	0	1	3	1	2	1	1	2
41	1	1	1	1	0	0	0	1	1	1	0
42	0	0	2	0	1	4	1	2	1	1	3
43	0	0	3	0	2	2	0	2	0	2	0
44	2	1	1	1	0	0	1(2)	2	2	1	0
45	0	0	3	0	0	1	0	1	0	1	0

	23	24	25	26	27	28	29	30	31	32	33
46	0	0	2	0	2	2	0	2	0	2	0
47	1	3	3	0	5	3	1	4	1	4	0
48	0	0	0	2	3	0	1(2)	0	0	1	0
49	1	0	0	1	0	0	0	0	0	0	0

	34	35	36	37	38	39	40	41	42	43	44
35	2										
36	3	1									
37	1	0	1								
38	0	0	2	3							
39	1	1	2	1	1						
40	1	1	2	3	3	3					
41	0	0	1	1	2	0	1				
42	1	1	2	2	2	4	5	2			
43	2	0	4	2	3	1	2	1	3		
44	0	0	0	1	2	0	1	2	0	2	
45	1	0	1	3	3	1	3	1	2	4	3
46	3	0	2	1	1	1	1	0	2	6	2
47	3	4	2	1	1	1	1	0	1	2	0
48	0	0	0	0	0	0	0	0	0	0	0(1)
49	1	2	1	0	2	0	0	1	0	2	0

	45	46	47	48
46	3			
47	1	2		
48	0	0	3	
49	0	0	1	1

2. 8. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,3) [**3**]	**2**. (0,4) [**4**]	**3**. (1,17) [**18**]
4. (1,6) [7] (1,9) [**10**]	**5**. (0,1) [**1**]	**6**. (2,6) [**8**]
7. (2,14) [**16**] (2,15) [**17**]	**8**. (4,4) [**8**]	**9**. (0,2) [**2**]
10. (0,1) [**1**]	**11**. (5,10) [**15**] (5,12) [**17**]	**12**. (2,0) [**2**]
13. (5,13) [**18**](6,14) [**20**]	**14**. (0,2) [**2**]	**15**. (3,1) [**4**]
16. (4,14) [**18**] (4,15) [**19**]	**17**. (3,6) [**9**] (6,8) [**14**]	**18**. (7,9) [**16**] (7,10) [**17**]
19. (1,3) [**4**] (4,5) [**9**]	**20**. (4,1) [**5**] (4,2) [**6**]	**21**. (0,2) [**2**]
22. (0,0) [**0**]	**23**. (5,3) [**8**]	**24**. (3,3) [**6**]
25. (6,11) [**17**]	**26**. (3,0) [**3**]	**27**. (10,7) [**17**]
28. (2,7) [**9**]	**29**. (0,0) [**0**]	**30**. (13,5) [**18**] (15,5) [**20**]
31. (2,0) [**2**]	**32**. (9,4) [**13**] (10,4) [**14**]	**33**. (2,2) [**4**]
34. (10,3) [**13**]	**35**. (1,1) [**2**]	**36**. (12,1) [**13**]
37. (1,3) [**4**]	**38**. (3,3) [**6**]	**39**. (2,2) [**4**]
40. (5,2) [**7**]	**41**. (0,0) [**0**]	**42**. (4,1) [**5**]
43. (5,2) [**7**] (8,2) [**10**]	**44**. (1,1) [**2**] (2,1) [**3**]	**45**. (7,1) [**8**]
46. (7,0) [**7**] (8,0) [**8**]	**47**. (15,1) [**16**] (16,1) [**17**]	**48**. (2,0) [**2**] (3,0) [**3**]
49. (5,-) [**5**]		

2. 8. 4. Texto resultante tras eliminar las oraciones marginales.

1. Cholesterol, an essential constituent of all cell membranes, forms part of the casing that protects nerve fibres and is a precursor in the production of vitamin D, steroid hormones and bile salts. **2**. However, too much cholesterol in the blood is associated with heart disease. **3**. While reducing elevated cholesterol levels cannot guarantee a healthy heart, scientists and doctors agree that it can reduce the risk of problems. **4**. Here we consider how this can be done through dietary considerations, by reducing the use of food components that raise cholesterol and by adding cholesterol-lowering ingredients – ie functional foods or ‘nutraceuticals’.

5. Most of the cholesterol we need is manufactured in our liver, ca 600 mg day. **6**. Research suggests that if a healthy adult absorbs ca 80 mg day of cholesterol from foods such as animal products and eggs, the liver synthesises ca nine times as much (ca 720 mg day). **7**. Reducing cholesterol in our diet therefore has only a modest effect on lowering blood cholesterol levels. **8**. Scientists therefore considered which other components in food have a significant effect on cholesterol levels.

9. Cholesterol is insoluble in water and has to be carried around the blood stream as lipoproteins (ie all the insoluble lipid molecules in the body, attached to proteins). **10**. Different combinations of lipids and proteins produce complexes of different densities. **11**. Low density lipoproteins (LDLs), for example, supply cholesterol to cells, increased levels of which are associated with atherosclerosis - ie an accumulation of lipids in plaques on artery walls, which narrows the arteries and restricts the blood flow to the heart (ischaemia) and brain (stroke). **12**. In contrast, high density lipoproteins (HDLs) transport cholesterol away from artery walls and therefore act as cardio-protectors. **13**. To reduce the risk of heart disease, people therefore need to lower both their total cholesterol levels and their LDL-cholesterol levels in the plasma.

14. Dietary fats, both animal and vegetable, are made up of a mixture of triglycerides. **15**. They are the major food constituents known to have a significant effect on cholesterol levels. **16**. Animal fats, in butter for example, consist of a relatively high proportion of saturated fatty acids, some of which according to Judy Donnelly, nutritional biochemist at Trinity and All Saints University College Leeds, 'increase the proportion of LDL-cholesterol in the blood, compared with HDL-cholesterol. **17**. Cutting down on the amount of saturated fatty acids we eat could therefore lower our risk of heart disease. **18**. In contrast, vegetable oils, such as those found in margarines, consist of long – chain polyunsaturated and monounsaturated fatty acids, which are associated with lowering LDL-cholesterol levels.

19. As people become more conscious of the benefits of cutting down excess intake of fats, especially saturated fats, spreads that contain <80 per cent fat are gaining in popularity. **20**. It is the saturated fatty acid content that makes butters and margarines solid so we can spread them. **21**. In lower fat spreads, fat substitutes are sometimes added to achieve the desired consistency and attributes. **23**. Many of the resulting spreads, however, are not as popular with consumers because, for example, they lack the saturated fatty acids that give butter its distinctive flavour. **24**. To improve the acceptability of low fat spreads, researchers are investigating synthetic replacements to animal fats, or 'structural fatitutes'. **25**. Such compounds provide many similar properties, such as taste and texture, but they are not digested or absorbed from the gut into the blood and therefore cannot raise LDL-cholesterol levels. **26**. They are used in the US in crisps and savoury products, but have not yet been added to fat spreads.

27. In the past few years the focus of research has shifted to adding ingredients (nutraceuticals) to food to reduce LDL-cholesterol levels. **28**. Since the early 1950s scientists have known that plant sterols, and their hydrogenated counterparts, stanols, have cholesterol-lowering properties. **30**. Over the years scientists have come to realise that these compounds are very effective at lowering LDL-cholesterol levels when sufficient is eaten, for example in rich fat spreads. **31**. Such products have recently been developed by esterifying the compounds with fatty acids to increase their fat solubility.

32. Two fat spreads – Benecol and Flora Proactive – are currently on the market for reducing LDL-cholesterol levels. **33**. Benecol contains plant stanol esters (sitostanol esters), and Flora Proactive contains sterol esters. **34**. Clinical trials, on people with elevated cholesterol levels, have shown that these products reduce total plama cholesterol levels and LDL-cholesterol levels by 8-13 per cent, without effecting HDL levels. **35**. Both products appear to have no adverse health effects and are non-toxic even in high doses, though a few people with the rare condition, phytosterolaemia cannot metabolise sterols and should avoid them.

36. According to Donnelly, there are two mechanisms by which these compounds are thought to lower cholesterol levels. **37**. 'Choresterol is not very soluble in the gut and its absorption is slow. **38**. Since you have other fats also being absorbed from the gut, cholesterol is one of the last to go through' she explained. **39**. 'Plant sterols and stanols have similar structures to cholesterol so they also get left behind. **40**. As the concentration of sterols/stanols increases, a threshold level is reached when the cholesterol molecules and the sterols/stanols coprecipitate into a solid crystalline form which cannot be absorbed by the gut' **42**. There is limited capacity for carrying cholesterol, and the plant sterols and stanols compete with cholesterol to get into the micelles, which limits the amount of cholesterol that can be absorbed. **43**. 'These mechanisms do not just reduce the absorption of dietary cholesterol', said Donnelly, 'but they also hinder reabsorption of some of the cholesterol produced by the body, which has been used in producing bile salts' **44**. Bile salts are used in the intestine to breakdown the fatty acids that we eat. **45**. Normally, the cholesterol in the bile salts would be recycled by re-absorption in the gut, but in this case they are excreted. **46**.

Essentially more of the cholesterol produced has to go in to producing more bile salts, reducing the amounts in the blood plasma.

47. Cholesterol-lowering spreads are some of the first functional foods on the market, but scientists are continually identifying ingredients that have potential health benefits. **48**. As new advances in food technology allow their incorporation into products, we will see a lot more on the supermarket shelves. **49**. Although these products can be beneficial, Donnelly says that she hopes ‘people do not begin to rely on them because they are not miracle cures and there are many other factors involved in heart disease, which these products do not address.

2. 9. Texto 9: *Apatite for destruction.*

1. The industrial revolution of the 18th and 19th centuries brought great prosperity to the UK, but not without a price. **2**. The environment Agency estimates that 300000 hectares of the UK is contaminated as a result of industrial pollution, for example cadmium and lead contamination associated with the iron, steel and paint industries. **3**. Now with the increasing demand for housing, which places pressure on the countryside, the Government requires that 60 per cent of all new housing should be built on reclaimed sites. **4**. Using current techniques of remediation – ‘dig and dump’ and ‘soil washing’ – the cost of reclaiming this land is estimated at £20 billion. **5**. However, scientists at the Natural History Museum believe they have found a cost-effective solution to treating heavy metal pollution by using bone-meal. **6**. Their method, presented by Dr Eugenia Valsami-Jones, at the BA festival of science, in London in September, involves ‘immobilising’ polluting metals as insoluble phosphates. **7**.The work is sponsored by the BOC Foundation and the Environment Agency.

8. Bone-meal, widely used as a garden fertiliser, is sterilised, crushed animal bone comprising two main components. **9**. There is an organic component, ie a fibrous protein (collagen) and an inorganic component, ie the crystalline mineral hydroxyapatite ($Ca_{10}(PO_4)_6OH_2$). **10**. It is the hydroxyapatite, with phosphate ions locked in its crystal structure, that allows bone-meal to trap heavy metals. **11**. The treatment of contaminated land with bone-meal is based on two reactions. **12**. First, on mixing with soil, bone-meal dissolves in the pore/rain water, releasing phosphate ions from the crystal structure, along with calcium ions and some hydroxide ions. **13**. Secondly, free phosphate ions react with the metal pollutant, forming insoluble metal phosphates. **14**.

This reaction locks the polluting metal into a rigid mineral structure, thus acting as a 'micro barrier' between the pollutant and the environment. **15**. Lab trials of bone-meal as a treatment for heavy metal pollution at the Natural History Museum using Scanning Electron Microscopy (SEM) confirm the formation of metal phosphate minerals with aluminium, copper, zinc, cadmium, nickel, lead and uranium.

16. In the short-term future the team hopes to demonstrate that the method will work at a variety of contaminated sites, thus establishing the long-term stability of the remediated metals. **17**. 'In the future, we hope to see the method being used and contributing to the improvement of the lives of people affected by heavy metal pollution', said Dr Valsami-Jones

2. 9. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. industrial – industrial* **rs**. UK – UK				
3	**hip**. UK – sites	**hip**. UK – sites			
4	**hip**. UK – land	**rs**. estimates – estimated* **hip**. UK – land	**rs**. reclaimed – reclaiming **psm**. sites – land		
5		**rs**. pollution – pollution **hip**. cadmium and lead – metal		**rs**. using – using **rs**. cost – cost	
6		**rc**. pollution – polluting **hip**. cadmium and lead – metals			**s**. scientists – their **rs**. metal – metals **rc**. pollution – polluting
7		**rs**. Environment – Environment **rs**. Agency – Agency			
8					**rs**. bone – bone **rs**. meal – meal
9					
10		**hip**. cadmium and lead – metals			**rs**. heavy – heavy **rs**. metal – metals **rs**. bone – bone **rs**. meal – meal
11	**hip**. UK – land	**hip**. UK – land **rs**. contaminated – contaminated	**psm**. sites – land	**rs**. land – land	**rc**. treating – treatment **pc**. pollution – contaminated (**pollute**) **rs**. bone – bone **rs**. meal – meal
12					**rs**. bone – bone **rs**. meal – meal
13		**rc**. pollution – pollutant **hip**. cadmium and lead – metal			**rs**. metal – metal **rc**. pollution – pollutant
14		**rs**. Environment – environment **rc**. pollution – polluting **hip**. cadmium and lead – metal			**rs**. metal – metal **rc**. pollution – polluting

	1	2	3	4	5
15		**rs**. pollution – pollution **rs**. cadmium – cadmium **rs**. lead – lead		**rs**. using – using	**rs**. Natural – Natural **rs**. History – History **rs**. Museum – Museum **rc**. treating – treatment **rs**. heavy – heavy **rs**. metal – metal **rs**. pollution – pollution **rs**. using – using **rs**. bone – bone **rs**. meal – meal
16	**hip**. UK – sites	**hip**. UK – sites **rs**. contaminated – contaminated **hip**. cadmium and lead – metals	**rs**. sites – sites	**rc**. remediation – remediated **psm**. land – sites	**hip**. scientists – team **rs**. metal – metals **pc**. pollution – contaminated (**pollute**)
17		**rs**. pollution – pollution **hip**. cadmium and lead – metal		**rs**. using – used	**rs**. heavy – heavy **rs**. metal – metal **rs**. pollution – pollution **rs**. using – used

	6	7	8	9	10	11
7						
8						
9			**rs**. components – component			
10	**rs**. metals – metals **rs**. phosphates – phosphate		**rs**. bone – bone **rs**. meal – meal	**rc**. crystalline – crystal **rs**. hydroxyapatite – hydroxyapatite		
11	**psm**. polluting – contaminated*		**rs**. bone – bone **rs**. meal – meal		**rs**. bone – bone **rs**. meal – meal	
12	**rs**. phosphates – phosphate		**rs**. bone – bone **rs**. meal – meal	**rc**. crystalline – crystal	**rs**. phosphate – phosphate **rs**. ions – ions **pc**. locked – releasing **rs**. crystal – crystal **rs**. structure – structure **rs**. bone – bone **rs**. meal – meal	**rs**. bone – bone **rs**. meal – meal
13	**rc**. polluting – pollutant **rs**. metals – metal **rs**. insoluble – insoluble **rs**. phosphates – phosphates				**rs**. phosphate – phosphate **rs**. ions – ions **pc**. locked – free (**unlock**) **rs**. metals – metal	**pc**. contaminated pollutant * (**pollute**) **rc**. reactions – react
14	**rs**. polluting – polluting **rs**. metals – metal	**rs**. Environment – environment		**rs**. mineral – mineral	**rs**. structure – structure **psm**. trap – locks **rs**. metals – metal	**psm**. contaminated – polluting* **rs**. reactions – reaction
15	**rc**. polluting – pollution **rs**. metals – metal **rs**. phosphates – phosphate		**rs**. bone – bone **rs**. meal – meal	**rs**. mineral – minerals	**rs**. phosphate – phosphate **rs**. bone – bone **rs**. meal – meal **rs**. heavy – heavy **rs**. metals – metal	**rs**. treatment – treatment **pc**. contaminated – pollution* (**pollute**) **rs**. bone – bone **rs**. meal – meal

	6	7	8	9	10	11
16	**tr**. their – team **rs**. method – method **psm**. polluting – contaminated* **rs**. metals – metals				**rs**. metals – metals	**rs**. contaminated – contaminated **psm**. land – sites
17	**rs**. method – method **rs**. Valsami-Jones – Valsami-Jones **rc**. polluting – pollution **rs**. metals – metal				**rs**. heavy – heavy **rs**. metals – metal	**pc**. contaminated – pollution* (**pollute**)

	12	13	14	15	16
13	**pc**. releasing – free (**freeing**) **rs**. phosphate – phosphate **rs**. ions – ions				
14	**rs**. structure – structure	**rs**. react – reaction **rs**. metal – metal **rs**. pollutant – pollutant			
15	**rs**. bone – bone **rs**. meal – meal **rs**. phosphate – phosphate	**rs**. metal – metal **rc**. pollutant – pollution **rc**. forming – formation **rs**. metal – metal **rs**. phosphates – phosphate	**rc**. polluting – pollution **rs**. metal – metal **rs**. mineral – minerals		
16		**rs**. metal – metals	**psm**. polluting – contaminated* **rs**. metal – metals	**rs**. metal – metals **pc**. pollution – contaminated* (**pollute**) **hip**. SEM – method	
17		**rs**. metal – metal **rc**. pollutant – pollution	**rc**. polluting – pollution **rs**. metal – metal	**rs**. heavy – heavy **rs**. metal – metal **rs**. pollution – pollution **rs**. using – used **hip**. SEM – method	**rs**. future – future **rs**. hopes – hope **rs**. method – method **pc**. contaminated – pollution* (**pollute**) **rs**. metals – metal

2. 9. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2	1(2)															
3	1	1														
4	1	1(2)	2													
5	0	2	0	2												
6	0	2	0	0	3											
7	0	2	0	0	0	0										
8	0	0	0	0	2	0	0									
9	0	0	0	0	0	0	0	1								
10	0	1	0	0	4	2	0	2	2							
11	1	2	1	1	4	0(1)	0	2	0	2						
12	0	0	0	0	2	1	0	2	1	7	2					
13	0	2	0	0	2	4	0	0	0	4	1(2)	3				
14	0	3	0	0	2	2	1	0	1	3	1(2)	1	3			
15	0	3	0	1	10	3	0	2	1	5	3(4)	3	5	3		
16	1	3	1	2	3	3(4)	0	0	0	1	2	0	1	1(2)	2(3)	
17	0	2	0	1	4	4	0	0	0	2	0(1)	0	2	2	5	4(5)

2. 9. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,0) [0]
2. (0,3) [3]
3. (0,0) [0]
4. (0,0) [0]
5. (0,6) [6]
6. (1,4) [5]
7. (0,0) [0]
8. (0,0) [0]
9. (0,0) [0]
10. (1,4) [5]
11. (1,1) [2]
12. (1,2) [3]
13. (3,2) [5]
14. (3,1) [4]
15. (8,2) [10]
16. (3,1) [4] (4,1) [5]
17. (4,-) [4]

2. 9. 4. Texto resultante tras eliminar las oraciones marginales.

2. The environment Agency estimates that 300000 hectares of the UK is contaminated as a result of industrial pollution, for example cadmium and lead contamination associated with the iron, steel and paint industries. **5**. However, scientists at the Natural History Museum believe they have found a cost-effective solution to treating heavy metal pollution by using bone-meal. **6**. Their method, presented by Dr Eugenia Valsami-Jones, at the BA festival of science, in London in September, involves ‘immobilising’ polluting metals as insoluble phosphates.

10. It is the hydroxyapatite [$(Ca_{10} (PO_4)_6 OH_2)$], with phosphate ions locked in its crystal structure, that allows bone-meal to trap heavy metals. **11**. The treatment of contaminated land with bone-meal is based on two reactions. **12**. First, on mixing with soil, bone-meal dissolves in the pore/rain water, releasing phosphate ions from the crystal structure, along with calcium ions and some hydroxide ions. **13**. Secondly, free phosphate ions react with the metal pollutant, forming insoluble metal phosphates. **14**. This reaction locks the polluting metal into a rigid mineral structure, thus acting as a ‘micro barrier’ between the pollutant and the environment. **15**. Lab trials of bone-meal as a treatment for heavy metal pollution at the Natural History Museum using Scanning Electron Microscopy (SEM) confirm the formation of metal phosphate minerals with aluminium, copper, zinc, cadmium, nickel, lead and uranium.

16. In the short-term future the team hopes to demonstrate that the method will work at a variety of contaminated sites, thus establishing the long-term stability of the remediated metals. **17**. ‘In the future, we hope to see the method being used and contributing to the improvement of the lives of people affected by heavy metal pollution’, said Dr Valsami-Jones

2. 10. Texto 10: *Hair-raising ideas.*

1. Hair could tell other people a lot more about you than you might want them to know. **2**. Two new methods of hair analyses presented at the American Chemical Society meeting in Washington in August both use supercritical fluid technologies to identify the perpetrators of crime. **3**. Typically, hair samples collected at crime scenes are inspected under microscope to determine colour, thickness and morphology (straightness). **4**. But, without resorting to DNA analysis, this frequently gives a profile that is far from unique.

5. At the US National Institute for Standards and Technology, Bruce Benner has come up with an analytical technique based on supercritical fluid (SF) extraction combined with GC-MS that can provide a more reliable chemical hair profile. **6**. By exploiting the powerful solubilising ability of $SFCO_2$, Benner is able to strip away from the hair a much greater proportion of the surrounding lipids and other ingredients, including several hormones and other proteins. **7**. Recent analyses of a variety of hair samples using the approach have revealed that the technique is highly reproducible, so criminals won't simply be able to disguise themselves by changing the shampoo or conditioner they use.

8. The external composition of hair also depends on a variety of other factors, Benner says, including what you eat, your gender and ethnic type, as well as your general health and well-being. **9**. In fact, looking at the general lipid composition of hair may even be a good way of detecting different illness, he adds.

10. Getting deeper inside the hair shaft can be even more revealing, according to Janet Morrison and Alison Rada at Trinity College, Conneticut. **11**. Here, researchers are interested in looking for signs of drug abuse by sample provider – in particular to detect illicit use of amphetamines, which includes increasingly common drugs such as MDMA (Ecstacy). **12**. Conventional procedures for detecting these drugs in blood and urine samples are notoriously time-consuming and involve a two step process that involves liquid-liquid or solid-phase extraction followed by lengthy derivatisation of the drugs to make analogues suitable for GC-MS analysis.**13**. Although even the $SFCO_2$ used for this new extraction process is not powerful enough to dissolve the amphetamines directly, the researchers are able to speed up this process enormously by incorporating the derivatising reagents in this extraction solvent.

14. By performing both extraction and derivatisation in one step, the researchers are able to reduce the time needed to carry out this detective work from several days to just over an hour. **15**. Morrison has already applied a similar technique for cocaine analyses in hair, but both methods will need to be validated by the courts before they can become routinely adopted by toxicologists. **16**. Not only do they promise to catch culprits more quickly, but hair greatly expands the time window for drug detection compared with urine and blood. **17**. Knowing that hair grows by 1cm per month, it is possible to obtain an accurate date for when the abuse took place.

2. 10. 1. Matriz de repetición de unidades léxicas.

	1	2	3	4	5
2	**rs**. hair – hair				
3	**rs**. hair – hair	**rs**. hair – hair **psm**. identify – determine **rs**. crime – crime			
4		**rs**. analyses – analysis	**d**. oración 3 – this		
5	**rs**. hair – hair	**psm**. methods – technique **rs**. hair – hair **rc**. analyses – analytical **rs**. supercritical – supercritical **rs**. fluid – fluid	**rs**. hair – hair	**rc**. analysis – analytical **psm**. gives – provide **rs**. profile – profile	
6	**rs**. hair – hair	**rs**. hair – hair	**rs**. hair – hair		**rs**. Benner – Benner **pc**. extraction – strip away (**extract**) **rs**. hair – hair
7	**rs**. hair – hair	**psm**. methods – technique **rs**. hair – hair **rs**. analyses – analyses **rs**. use – using **rc**. crime – criminals	**rs**. hair – hair **rs**. samples – samples **rc**. crime – criminals	**rs**. analysis – analyses	**rc**. analytical – analyses **rs**. technique – technique **rs**. hair – hair
8	**rs**. hair – hair **rs**. you – you+	**rs**. hair – hair	**rs**. hair – hair		**rs**. Benner – Benner **rs**. hair – hair
9	**rs**. hair – hair	**rs**. hair – hair	**rs**. hair – hair **psm**. inspected – looking at		**s**. Benner – he **rs**. hair – hair
10	**rs**. hair – hair **pc**. tell – revealing (**telling**)	**rs**. hair – hair	**rs**. hair – hair		**rs**. hair – hair
11			**rs**. samples – sample		
12		**a**. new – conventional **psm**. methods – procedures **rs**. analyses – analysis	**rs**. samples – samples*	**rs**. analysis – analysis	**rc**. analytical – analysis **rs**. extraction – extraction **rs**. GC-MS – GC-MS
13					**rs**. extraction – extraction
14					**rs**. extraction – extraction

	1	2	3	4	5
15	**rs**. hair – hair	**rs**. methods – methods **rs**. hair – hair **rs**. analyses – analyses **rc**. technologies – technique	**rs**. hair – hair	**rs**. analysis – analyses	**rc**. analytical – analyses **rs**. technique – technique **rs**. hair – hair
16	**rs**. hair – hair	**s**. methods – they **rs**. hair – hair **tr**. crime – culprits	**rs**. hair – hair		**rs**. hair – hair
17	**rs**. hair – hair	**rs**. hair – hair	**rs**. hair – hair		**rs**. hair – hair

	6	7	8	9	10	11
7	**hip**. $SFCO_2$ – technique **rs**. hair – hair					
8	**rs**. Benner – Benner **rs**. hair – hair	**rs**. hair – hair				
9	**s**. Benner – he **rs**. hair – hair **rs**. lipids – lipid	**rs**. hair – hair	**rs**. composition – composition **rs**. hair – hair **s**. Benner – he **psm**. says – adds			
10	**rs**. hair – hair	**rs**. hair – hair **rc**. revealed – revealing	**rs**. hair – hair	**rs**. hair – hair		
11		**rs**. samples – sample		**rs**. detecting – detect	**co-ref**. Morrison and Rada – researchers	
12	**pc** strip away – extraction (**extract**)			**rs**. detecting – detecting		**rs**. sample – sample **rs**. detect – detecting **rs**. drugs – drugs
13	**rs**. powerful – powerful **rs**. $SFCO_2$ – $SFCO_2$ **psm**. strip away – dissolve				**co-ref**. Morrison and Rada – researchers	**rs**. researchers – researchers **rs**. amphetamines – amphetamines
14	**pc** strip away – extraction (**extract**)			**rc**. detecting – detective	**co-ref**. Morrison and Rada – researchers	**rs**. researchers – researchers **rc**. detect – detective
15	**hip**. $SFCO_2$ – technique **rs**. hair – hair	**rs**. analyses – analyses **rs**. hair – hair **rs**. technique – technique	**rs**. hair – hair	**rs**. hair – hair	**rs**. Morrison – Morrison **rs**. hair – hair	**tr**. drugs – cocaine
16	**rs**. hair – hair	**rs**. hair – hair **hip**. criminals – culprits	**rs**. hair – hair	**rs**. hair – hair **rc**. detecting – detection	**rs**. hair – hair	**rs**. drug – drug **rs**. detect – detection
17	**rs**. hair – hair	**rs**. hair – hair	**rs**. hair – hair	**rs**. hair – hair	**rs**. hair – hair	**e**. drug – 0 **rs**. abuse – abuse

	12	13	14	15	16
13	**tr**. drugs – amphetamines **rs**. process – process **rs**. extraction – extraction **pc**. lengthy – speed up (**lengthen**) **rc**. derivatisation – derivatising				
14	**rc**. detecting – detective **rs**. time – time **rs**. step – step **rs**. extraction – extraction **pc**. lengthy – reduce (**lengthen**) **rs**. derivatisation – derivatisation	**rs**. extraction – extraction **rs**. researchers – researchers **rs**. are able – are able **a**. speed up – reduce **rc**. derivatising – derivatisation			
15	**tr**. drugs – cocaine	**hip**. $SFCO_2$ – technique **tr**. amphetamines – cocaine			
16	**rs**. drugs – drug **rc**. detecting – detection **rs**. blood – blood **rs**. urine – urine	**hip**. amphetamines – drug	**rc**. detective – detection	**hip**. cocaine – drug **rs**. hair – hair **s**. methods – they	
17				**rs**. hair – hair	**rs**. hair – hair

2. 10. 2. Matriz con el número de unidades léxicas.

	1	2	3	4	5	6	7	8	9	10	11
2	1										
3	1	3									
4	0	1	1								
5	1	5	1	3							
6	1	1	1	0	3						
7	1	5	3	1	3	2					
8	1(2)	1	1	0	2	2	1				
9	1	1	2	0	2	3	1	4			
10	2	1	1	0	1	1	2	1	1		
11	0	0	1	0	0	0	1	0	1	1	
12	0	3	0(1)	1	3	1	0	0	1	0	3
13	0	0	0	0	1	3	0	0	0	1	2
14	0	0	0	0	1	1	0	0	1	1	2
15	1	4	1	1	3	2	3	1	1	2	1
16	1	3	1	0	1	1	2	1	2	1	2
17	1	1	1	0	1	1	1	1	1	1	2

	12	13	14	15	16
13	5				
14	6	5			
15	1	2	0		
16	4	1	1	3	
17	0	0	0	1	1

2. 10. 3. Tabla representativa del número de conexiones entre oraciones.

1. (-,0) [**0**]	**2**. (0,6) [**6**]	**3**. (1,1) [**2**]
4. (0,1) [**1**]	**5**. (2,4) [**6**]	**6**. (1,2) [**3**]
7. (3,1) [**4**]	**8**. (0,1) [**1**]	**9**. (2,0) [**2**]
10. (0,0) [**0**]	**11**. (0,1) [**1**]	**12**. (3,3) [**6**]
13. (2,1) [**3**]	**14**. (2,0) [**2**]	**15**. (3,1) [**4**]
16. (3,0) [**3**]	**17**. (0,-) [**0**]	

2. 10. 4. Texto resultante tras eliminar las oraciones marginales.

2. Two new methods of hair analyses presented at the American Chemical Society meeting in Washington in August both use supercritical fluid technologies to identify the perpetrators of crime. **3**. Typically, hair samples collected at crime scenes are inspected under microscope to determine colour, thickness and morphology (straightness). **4**. But, without resorting to DNA analysis, this frequently gives a profile that is far from unique.

5. At the US National Institute for Standards and Technology, Bruce Benner has come up with an analytical technique based on supercritical fluid (SF) extraction combined with GC-MS that can provide a more reliable chemical hair profile. **6**. By exploiting the powerful solubilising ability of $SFCO_2$, Benner is able to strip away from the hair a much greater proportion of the surrounding lipids and other ingredients, including several hormones and other proteins. **7**. Recent analyses of a variety of hair samples using the approach have revealed that the technique is highly reproducible, so criminals won't simply be able to disguise themselves by changing the shampoo or conditioner they use.

8. The external composition of hair also depends on a variety of other factors, Benner says, including what you eat, your gender and ethnic type, as well as your general health and well-being. **9**. In fact, looking at the general lipid composition of hair may even be a good way of detecting different illness, he adds.

11. Here, researchers are interested in looking for signs of drug abuse by sample provider – in particular to detect illicit use of amphetamines, which includes increasingly common drugs such as MDMA (Ecstacy). **12**. Conventional procedures for detecting these drugs in blood and urine samples are notoriously time-consuming and involve a two step process that involves liquid-liquid or solid-phase extraction followed by lengthy derivatisation of the drugs to make analogues suitable for GC-MS analysis.**13**. Although even the $SFCO_2$ used for this new extraction process is not powerful enough to dissolve the amphetamines directly, the researchers are able to speed up this process enormously by incorporating the derivatising reagents in this extraction solvent.

14. By performing both extraction and derivatisation in one step, the researchers are able to reduce the time needed to carry out this detective work from several days to just over an hour. **15**. Morrison has already applied a similar technique for cocaine analyses in hair, but both methods will need to be validated by the courts before they can become routinely adopted by toxicologists. **16**. Not only do they promise to catch culprits more quickly, but hair greatly expands the time window for drug detection compared with urine and blood.

3. LISTADO DE UNIDADES LÉXICAS QUE HAN ESTABLECIDO REPETICIÓN.

UNIDAD LÉXICA	IAI	AAI	UNIDAD LÉXICA	IAI	AAI
4^{TH}		●	ANALYZE	●	
ABILITY		●	ANALYZERS	●	
ABLE		●	ANALYZING	●	
ABSORBED		●	ANIMAL		●
ABSORBS		●	APPLICATIONS		●
ABSORPTION		●	APPLIED	●	
ABUSE		●	APPLY		●
ACCEPTABILITY		●	AQUA		●
ACID		●	AQUEOUS	●	
ACIDS		●	ARTERY		●
ADD		●	ASSOCIATED		●
ADDED	●	●	AT THE SAME TIME		●
ADDING		●	ATMOSPHERE	●	
ADDS		●	ATMOSPHERIC	●	
ADEQUATE	●	●	ATOMIC		●
ADOPTED	●		ATOMS		●
ADOPTION	●		ATTACHED		●
ADSORBED	●		ATTACK	●	
ADULT		●	ATTACKS	●	
ADVERSE	●	●	ATTRIBUTES		●
AEROSOLS	●		AU		●
AFFECT		●	AUTOMATED	●	
AG		●	BAKERY	●	
AGENCY		●	BALL		●
AGNOSTIC		●	BALLOON	●	
AGNOSTICS		●	BALLS		●
AIR	●	●	BAR		●
AIRCRAFT		●	BARS		●
ALCOHOL	●		BASE		●
ALCOHOLIC	●		BASED	●	
ALL	●		BATCH	●	
ALLEGORY		●	BEAM		●
ALLOW		●	BECOME		●
ALLOWING		●	BECOMES		●
ALLOY		●	BEER		●
ALLOYS		●	BEGAN		●
ALTERNATIVE	●		BEGUN		●
ALTERNATIVES	●		BEHAVIOR	●	
AMAZING		●	BENECOL		●
AMAZINGLY		●	BENEFICIAL		●
AMOUNT		●	BENEFITS		●
AMOUNTS	●	●	BENZENE		●
AMPHETAMINES		●	BIGGER		●
ANALOGY		●	BILE		●
ANALYSERS	●		BIMOLECULAR		●
ANALYSES		●	BINDING	●	
ANALYSING	●		BIOSPHERE	●	
ANALYSIS	●	●	BIRTH	●	
ANALYSTS	●		BLAST		●
ANALYTICAL	●	●	BLASTING		●

BLOOD	●	●	CHEMICALLY		●
BODY		●	CHEMICALS		●
BOND		●	CHEMIST		●
BONDS		●	CHEMISTRY		●
BONE		●	CHEMISTS		●
BORE	●		CHOLESTEROL		●
BOROHYDRIDE	●		CHROMATOGRAPHIC	●	●
BOTTOM		●	CHROMATOGRAPHY	●	
BOYFRIEND		●	CHURCH		●
BREAK		●	CHURCHES		●
BREAST	●		CIGARETTE	●	
BRIEF		●	CITY		●
BRITAIN		●	CLAIMED		●
BRITISH		●	CLAIMING		●
BURN		●	CLASSICAL	●	
BURNED		●	CLASSIFICATION		●
BURNING		●	CLASSIFIED		●
BURNS		●	CLEAN	●	
BURST		●	CLOSE		●
BURSTS		●	CO_2	●	
BUTTER		●	COCAINE		●
BUTTERS		●	COFERMENTATION	●	
C	●		COLLEAGUES		●
CA		●	COLLECTING	●	
CADMIUM		●	COLLECTION	●	
CAFFEINE		●	COLOR		●
CAN		●	COLORED		●
CANNOT		●	COLORLESS		●
CAPILLARY	●		COLORS		●
CARAT		●	COLOURS	●	
CARBON	●	●	COLUMN	●	
CARBONACEOUS	●		COLUMNS	●	
CARBONYL		●	COMBUSTIBLE		●
CARBONYLS		●	COME		●
CARCINOGEN	●		COMMENTED		●
CARCINOGENS	●		COMPARISON	●	
CARDIO		●	COMPLETE		●
CARRIED		●	COMPONENT		●
CARRYING		●	COMPONENTS		●
CATALYSE		●	COMPOSED		●
CATALYST		●	COMPOSITION	●	●
CAUGHT		●	COMPOSITIONS		●
CELL	●	●	COMPOUND	●	●
CELLS	●	●	COMPOUNDS	●	●
CHAIN		●	CONCENTRATION	●	
CHANGE	●	●	CONCENTRATIONS	●	
CHANGES	●	●	CONCERN	●	
CHARACTERISTIC		●	CONDITIONS	●	
CHARACTERIZATION	●		CONDUCTED	●	
CHARACTERIZE	●		CONDUCTIVITY	●	
CHARGE		●	CONDUCTOMETRIC	●	
CHEESE	●		CONFIGURATION		●
CHEM.		●	CONFIGURATIONS		●
CHEMICAL	●	●	CONFORMATION	●	

CONSIDERABLY	●		DESCRIBE	●	
CONSIDERED		●	DESCRIBED	●	
CONSIST		●	DESIGNATED		●
CONSTITUENTS		●	DESIGNATION		●
CONSTRAINS	●		DESIGNED	●	
CONSUMERS		●	DESIGNS	●	
CONTACT	●		DESTROY		●
CONTAIN	●	●	DETAILED	●	
CONTAINING	●		DETAILS	●	
CONTAMINATED		●	DETECT		●
CONTENT	●	●	DETECTING		●
CONTINUED		●	DETECTION		●
CONTINUOUS	●		DETECTIVE		●
CONTINUOUSLY		●	DETERMINAND	●	
CONVENTIONAL	●	●	DETERMINATION	●	
COOLING	●		DETERMINE	●	●
COPPER	●	●	DETERMINED	●	●
CORN	●		DETERMINING	●	
COST		●	DEVELOP	●	●
COULD		●	DEVELOPED	●	
COULOMETRIC	●		DEVELOPMENT	●	
COW	●		DEVICE	●	
CRASH		●	DIALYSATE	●	
CRASHES		●	DIALYSATES	●	
CRIME		●	DIALYSIS	●	
CRIMINALS		●	DIESEL	●	
CRITERIA	●		DIET		●
CRYSTAL		●	DIETARY	●	●
CRYSTALLINE		●	DIFFERENCE		●
CU		●	DIFFERENT	●	●
CULPRITS		●	DIHYDROGEN		●
CULTURE	●		DIOXIDE		●
CURIOSITY		●	DISADVANTAGES	●	
CURIOUS		●	DISCOVERED		●
CUTTING DOWN		●	DISCOVERY		●
CYANIDE	●	●	DISCUSSION	●	
CYANO		●	DISEASE	●	●
CYT C /BGH	●		DISPOSED OF		●
D		●	DISSOCIATION		●
DATA	●		DISSOLUTION		●
DAY		●	DISSOLVE		●
DEATH	●		DISSOLVED		●
DECOMPOSE		●	DISSOLVES		●
DECOMPOSES		●	DISTANCE		●
DECOMPOSITION		●	DISTRIBUTION		●
DECREASE		●	DMS	●	
DEFINED	●		DONE		●
DEFORESTAT	●		DRINK		●
DELETERIOUS	●		DRINKING		●
DENSITIES		●	DRUG		●
DENSITY		●	DRUGS		●
DERIVATISING		●	DUAL	●	
DERIVATIZATION	●	●	DYE	●	
DERIVATIZATIONS	●		DYES	●	

EARRINGS		●	FED	●	
EASIER		●	FEMTOCHEMISTRY		●
EAT		●	FEMTOSECOND		●
EATEN		●	FEMTOSECONDS		●
EC	●		FERMENT	●	
EFFECT		●	FERMENTATING	●	
EFFECTIVE		●	FERMENTATION	●	
EFFECTS	●	●	FERMENTED	●	
EFFICIENCY	●		FERMENTING	●	
EFFICIENT	●		FEW		●
ELECTRON		●	FIBERS		●
ELECTRONIC		●	FIELD	●	
ELECTRONS		●	FIGURE		●
ELEMENTAL	●		FINISH		●
ELEMENTS	●	●	FIRE		●
ELEVATED		●	FIRST	●	●
EMPLOYING	●		FLAME		●
END		●	FLAMELESS		●
ENERGETIC		●	FLAMMABILITY		●
ENERGIES		●	FLAMMABLE		●
ENERGY		●	FLASH		●
ENGINE	●		FLASHES		●
ENOUGH		●	FLASHLAMP		●
ENRICHMENT	●		FLASK	●	
ENVIRONMENT		●	FLASKS	●	
ENVIRONMENTAL	●		FLAVOUR		●
ERROR		●	FLEETING		●
ESTABLISHED	●		FLEETINGLY		●
ESTIMATED		●	FLORA		●
ESTIMATES		●	FLUID		●
ETHANOL	●		FLUIDS	●	●
EXAMINE	●		FLUORESCENCE	●	
EXAMINED	●		FLUORINE		●
EXCESSIVE	●		FLUOROPOLYMER		●
EXEMPLARY		●	FLUX	●	
EXERCISE		●	FLUXES	●	
EXHAUST	●		FOLKS		●
EXISTS		●	FOOD	●	●
EXPERIMENT		●	FOODS	●	●
EXPERIMENTS		●	FORM		●
EXPLAINED		●	FORMATION		●
EXPOSED		●	FORMED		●
EXPOSURE	●	●	FORMING		●
EXTERNAL		●	FORMS	●	●
EXTRACT		●	FORMULA	●	
EXTRACTED		●	FOSSIL	●	
EXTRACTION	●	●	FOUND	●	●
EYE		●	FOURTH		●
FAA		●	FRACTION		●
FAST		●	FRECUENCY		●
FAT		●	FREE		●
FATITUTES		●	FREEZE		●
FATS		●	FREEZES		●
FATTY		●	FROZEN		●

FS		●	HUMAN	●	
FUEL	●		HUMANS	●	
FUELS	●		HYDROCHLORIC		●
FULL-TERM	●		HYDROGEN		●
FUNCTIONAL		●	HYDROXYAPATITE		●
FUTURE		●	IDEA		●
GAS		●	IDENTICAL		●
GASEOUS		●	IDENTIFY	●	●
GASES		●	IDENTITIES	●	
GC – GC	●		IDENTITY	●	
GC-MS		●	IGNITED		●
GIFT		●	ILLUSTRATE		●
GIVE	●	●	IMPACT		●
GIVE OFF		●	IMPART	●	
GIVES		●	IMPEDED	●	
GIVING	●		IMPURITIES		●
GLUCOSE	●		IN SITU	●	
GOLD		●	IN VITRO	●	
GREEN		●	INCINERATION		●
GREENHOUSE GASES	●		INCLUDE	●	
GROUP		●	INCLUDING	●	
GROUPS	●		INCORPORATION		●
GROWTH	●		INCREASE	●	●
GUT		●	INCREASED		●
HAD		●	INDUSTRIAL		●
HAIR		●	INDUSTRIES	●	
HALLMARKS		●	INDUSTRY	●	
HAND		●	INETERCOMPARISON	●	
HANDLE		●	INFANCY	●	
HAPPEN		●	INFANT	●	
HAPPENING		●	INGREDIENTS		●
HAPPENS		●	INJECTED	●	
HAS		●	INOCULUM	●	
HAVE		●	INSOLUBLE		●
HDL		●	INSPECTED		●
HDLS		●	INSPIRATION		●
HEALTH	●	●	INSTANT		●
HEALTHY		●	INSTRUMENT	●	
HEART		●	INSTRUMENTATION	●	
HEAT		●	INSTRUMENTS	●	
HEATED		●	INTERACT	●	
HEATING		●	INTERACTING		●
HEATS		●	INTERACTION	●	●
HEAVY		●	INTERACTIONS	●	●
HELP		●	INTERCOMPARISON	●	
HIGH	●	●	INTERLABORATORY	●	
HIGHER	●	●	INTESTINE		●
HINDER		●	INTRODUCED	●	
HIPOCRITES		●	INVESTIGATE	●	
HISTORY		●	INVESTIGATED	●	
HOPE		●	INVESTIGATING	●	
HOPES		●	INVESTIGATION	●	
HPLC	●		INVOLVE		●
HS	●		INVOLVED		●

INVOLVEMENT		●	LOCKS		●
IODINE		●	LOOK AT		●
ION		●	LOOKING AT		●
IONIZATION		●	LOSING		●
IONS		●	LOW	●	●
IRON	●		LOWER	●	●
IS OVER		●	LOWERING		●
ISCHAEMIA		●	LOWEST		●
ISOLATION	●		MADE		●
ITEM		●	MADE UP OF		●
ITEMS		●	MAIN		●
JEWELRY		●	MAKE		●
JULY		●	MAKING		●
K		●	MANAGEMENT	●	
KEEP		●	MANGANESE	●	
KITE	●		MANUFACTURE		●
KNOWLEDGE	●		MANUFACTURED		●
KNOWN	●		MARGARINES		●
LABORATORIES	●		MARKED		●
LACTOSE	●		MARKET		●
LAND		●	MARKETED		●
LARGE	●	●	MARKING		●
LARGER	●	●	MASH	●	
LASER		●	MASS	●	
LASERS		●	MASSACHUSETTS		●
LASTED		●	MATERIAL	●	
LASTING		●	MATERIALS		●
LASTS		●	MATERNAL	●	
LDLS		●	MEAL		●
LEAD		●	MEAN	●	●
LEAVE		●	MEASURE	●	
LEAVING		●	MEASURED	●	
LENGTHY		●	MEASUREMENT	●	
LEVEL	●	●	MEASUREMENTS	●	
LEVELS	●	●	MEASURING	●	
LIFE	●		MECHANISMS		●
LIGHT		●	MEDICINE		●
LIGHTWEIGHT	●		MEDICINES		●
LIKELY		●	MEDIUM	●	
LIMITATION	●		MELT		●
LIMITATIONS	●		MEMBRANES	●	
LIMITED	●		METABOLISM	●	
LIMITS		●	METAL		●
LINE	●	●	METALLOPROTEINS	●	
LINES	●		METALS		●
LIPID		●	METHOD	●	●
LIPIDS		●	METHODS	●	●
LIPOPROTEINS		●	MG		●
LIQUEFY		●	MICELLES		●
LIQUID		●	MICROCONSTITUENTS	●	
LIQUIDS		●	MICRONUTRIENTS	●	
LIVER		●	MICROSECOND		●
LOCATION	●		MICROSENSOR	●	
LOCKED		●	MICROSENSORS	●	

MILK	●		OBSERVATION		●
MILLI		●	OBSERVE		●
MILLISECOND		●	OBSERVED	●	●
MINERAL		●	OBSERVING		●
MINERALS		●	OBTAINED	●	●
MINIMUM		●	OC	●	
MIXING	●		OCEANS	●	
MIXTURES		●	OFF-LINE	●	
ML	●		OFFSITE	●	
MODELS	●		OIL		●
MODEST		●	OILY		●
MODIFIED	●		OLIGOSACCHARIDES	●	
MOLE		●	ON-LINE	●	
MOLECULAR	●	●	OPERATED	●	
MOLECULE		●	OPERATIONAL	●	
MOLECULES	●	●	OPTICAL	●	
MOLTEN		●	ORGANIC	●	●
MONITORING	●		ORIENTATION	●	
MONTHS	●		OUTCOME		●
MOTHER	●		OVEN	●	
MUSEUM		●	OVERLAP		●
NAKED		●	OXIDANT		●
NATURAL	●	●	OXIDATION		●
NATURE	●		OXIDE		●
NDIR	●		OXIDIZE		●
NECESSARY	●	●	OXIDIZED		●
NECK		●	OXIDIZER		●
NECKLACE		●	PANELS		●
NECKLACES		●	PAPER	●	
NEEDED	●		PARTICIPANTS		●
NERVE	●		PARTICIPATED	●	
NERVOUS	●		PARTICLES		●
NEUROREGULATING	●		PARTICULATE	●	
NEW		●	PAST	●	
NEWBORN	●		PATTERN	●	
NI		●	PBO		●
NICKEL		●	PEOPLE		●
NIOSH	●		PEPTIDE	●	
NITRIC		●	PEPTIDES	●	
NITROGEN		●	PERCENT		●
NOBEL		●	PERCENTAGE		●
NOBLE		●	PERFORM	●	
NONCANCER	●		PERFORMED	●	
NON-FLAMMABILITY		●	PERIOD	●	
NON-FLAMMABLE		●	PERMITTED	●	
NOTTINGHAM		●	PERSON		●
NPD	●		PET		●
NUCLEAR		●	PHA		●
NUMBER	●		PHASE	●	
NUMBERS	●		PHOSPHATE		●
NUTRACEUTICALS		●	PHOSPHATES		●
NUTRITIVE	●		PHOTOGRAPHS		●
NYLON		●	PHOTONS		●
OBJECT		●	PHYSICAL	●	

PHYSICOCHEMICAL	●		PRODUCED	●	●
PICOSCALE		●	PRODUCING		●
PICOSECOND		●	PRODUCTION	●	●
PICTURES		●	PRODUCTS	●	●
PIECE		●	PROFILE	●	●
PLANE		●	PROGRESSION	●	
PLANT		●	PROPAGATES		●
PLANTED		●	PROPERTIES		●
PLANTING		●	PROPOSED	●	
PLASMA	●	●	PROTECTORS		●
PLATELET	●		PROTECTS		●
PLATFORMS	●		PROTEIN	●	
POLLUTANT		●	PROTEINS	●	●
POLLUTANTS	●		PROTEOLYTIC	●	
POLLUTED	●		PROTEOME	●	
POLLUTING		●	PROVIDE	●	
POLLUTION	●	●	PROVIDE		●
POLYMER		●	PUBLISHED	●	
POLYMERISATION		●	PULSE		●
POLYMERS		●	PULSING		●
POLYPEPTIDES	●		PURE		●
POLYUNSATURATED		●	PURIFY		●
POPULAR		●	PUT		●
POPULARITY		●	QUANTITATIVE	●	
POSSIBLE		●	QUANTITIES	●	
POTENTIAL		●	QUESTION		●
POTENTIALS		●	QUESTIONS		●
POWERFUL		●	QUICKLY		●
PRACTICALLY		●	RACE		●
PRAY		●	RACERS		●
PRAYER		●	RACING		●
PRAYING		●	RADICAL		●
PRECISION	●		RADICALS		●
PREDICT		●	RADII		●
PREDICTION		●	RADIUS		●
PREMATURE	●		RAISE		●
PRENATAL	●		RATIO	●	
PREPARATION	●		RATIOS	●	
PREPARE		●	RE-ABSORPTION		●
PREPARING		●	REACH		●
PRESSURE	●	●	REACHED		●
PRE-TERM	●		REACT		●
PREVENT		●	REACTANT		●
PRIZE		●	REACTANTS		●
PROACTIVE		●	REACTION		●
PROBABILITY		●	REACTIONS		●
PROBABLE		●	REACTIVE		●
PROBLEM		●	REACTOR		●
PROCEDURES	●		REAL		●
PROCESS		●	RECEIVED		●
PROCESSED	●		RECENTLY	●	
PROCESSING	●		RECIPIENT		●
PROCESSORS	●		RECLAIMED		●
PRODUCE	●	●	RECLAIMING		●

REDUCE		●	SAVOURY		●
REDUCING		●	SAW		●
REDUCTANT	●		SAYS		●
REDUCTION	●		SCALE		●
REFERENCES		●	SCF		●
REFLECTION		●	SCFS		●
REFLECTIONS		●	SCIENTISTS		●
REFLECTS		●	SEAT		●
REGIA		●	SEATS		●
REGION	●		SECOND		●
REGIONS	●		SEE		●
REGULATION	●		SEEN		●
RELATED	●	●	SELECTED	●	
RELEASED	●		SELENIUM	●	
RELEASING		●	SELF- EXTINGUISHES		●
REMEDIATED		●	SELF-EXTINGUISHING		●
REMEDIATION		●	SEM		●
REMOVED		●	SENSITIVITY	●	●
REPLACEMENTS		●	SENSITIZATION		●
REPORT	●		SENSITIZED		●
REPORTED	●		SEPARATION	●	
REPORTS	●		SERIES		●
REQIRED		●	SEROTONIN	●	
REQUIREMENT	●		SERUM	●	
RESEARCH	●	●	SETTINGS	●	
RESEARCHERS		●	SEVEN	●	
RESERVOIR			$SFCO_2$		●
RESIDUAL		●	SHINE		●
RESIDUE		●	SHORT		●
RESISTANT		●	SHORTER		●
RESTRICT		●	SHOW		●
RESULTS	●	●	SHOWED		●
RETENTION	●		SHOWING		●
REVEAL		●	SHOWN		●
REVEALED		●	SIGNIFICANT		●
REVEALING		●	SIGNIFICANTLY	●	
REVERSED	●		SILVER		●
RFC	●		SILVERY		●
RICH		●	SIMPLEST		●
RISE	●		SIMULTANEOUSLY		●
RISK		●	SINGLE	●	
RP-HPLC	●		SINKS	●	
RSD	●		SINNERS		●
RUN		●	SITES		●
RUNNING		●	SLOWLY		●
SAID		●	SMALL	●	●
SAINTS		●	SMOKE	●	
SALT		●	SMOKES	●	
SALTS		●	SNAPSHOTS		●
SAME	●	●	SOLD		●
SAMPLE	●	●	SOLUBLE		●
SAMPLES	●	●	SOLUTE	●	
SAMPLING	●		SOLUTION		●
SATURATED		●	SOLUTIONS		●

SOLVENT		●	SUPERCRITICAL		●
SOLVENTS		●	SUPERMARKET		●
SORBENT	●		SUPPLIED	●	
SORBENTS	●		SUPPLY	●	
SOURCES	●		SURFACE	●	
SOUTHERN		●	SURPRISING		●
SOY	●		SURVEY		●
SPE	●		SURVIVABLE		●
SPECIAL	●		SURVIVAL		●
SPECIATION	●		SYNTHETIC	●	
SPECIES		●	SYSTEM	●	●
SPECIFIC	●		TAKE		●
SPECIFIES		●	TAKEN		●
SPECTROMETRY	●		TAKES		●
SPECTRUM		●	TALE		●
SPEED		●	TASTE		●
SPEED UP		●	TEAM		●
SPREAD		●	TEAMS		●
SPREADS		●	TECH		●
STABILITY	●		TECHNICAL	●	
STAGE	●		TECHNIQUE	●	●
STANOL		●	TECHNIQUES	●	
STANOLS		●	TECHNOLOGIES		●
STARCH	●		TEETOTALERS		●
STARCHY	●		TELL		●
STATE		●	TEMPERATURE	●	●
STATES		●	TEMPERATURES	●	●
STEP		●	TENDENCY	●	
STEROL		●	TERMINAL		●
STEROLS		●	TEST		●
STONE		●	TESTED		●
STORES	●		TESTING		●
STORY		●	TESTS		●
STRANGE		●	TEXTBOOKS		●
STRANGELY		●	THERMAL	●	
STREET		●	THREAD		●
STRIP AWAY		●	THREADS		●
STRUCTURAL	●	●	THROMBOCYTES	●	
STRUCTURE	●	●	TIME		●
STRUCTURES		●	TIMES	●	
STUDENTS		●	TIMESCALE		●
STUDIED		●	TIMESCALES		●
STUDIES	●	●	TISSUE	●	
STUDY	●		TISSUES	●	
STUDYING	●		TOTAL		●
SUBLEVELS		●	TOUCHSTONE		●
SUBSTANCE	●	●	TOWN		●
SUBSTITUTE		●	TOWNS		●
SUBSTITUTES		●	TOWSFOLK		●
SUCCESSFULLY	●		TOXIC		●
SUFFICIENT		●	TRACE	●	
SUGAR	●		TRANSFER	●	
SUGARS	●		TRANSFERRED	●	
SULFUR	●		TRANSFORMED		●

TRANSIENT		●
TRANSITION		●
TRANSITIONS		●
TRANSPORT		●
TRAP		●
TRASITIONARY		●
TREATING		●
TREATMENT		●
TREND	●	
TRIGGER		●
TRIGGERED		●
TUMOR	●	
TUMORS	●	
TURNING		●
TYPE		●
TYPES		●
UK		●
UNDERTAKEN		●
UNIMOLECULAR		●
UNIVERSITY		●
UNKNOWN	●	
UNLIKELY		●
UNPOLLUTED	●	
URINE		●
USE	●	●
USED	●	●
USEFUL	●	●
USES	●	
USING	●	●
UTILIZATION	●	
VACUUM		●
VALUE	●	
VALUES	●	
VAPOR	●	
VARIABILITY	●	
VARIATION	●	
VARIATIONS	●	
VARIES	●	
VARY	●	
VEGETABLE		●
VERTICAL	●	
VIA	●	
VIBRATE		●
VIBRATIONS		●
VOC		●
VOCS		●
VOLUMES	●	
WALLS		●
WASTE	●	●
WASTES	●	
WATCH		●
WATCHING		●
WATER	●	●
WATERS	●	
WAY		●
WEAK		●
WEAKER		●
WEARER		●
WEIGHT	●	●
WELL	●	
WHEY	●	
WHITE		●
WHOLE	●	
WIN		●
WORK	●	●
WORKERS	●	
WORKING		
WORKPLACE	●	
WORKPLACES	●	
YEARS	●	
YEAST	●	
YELLOW		●
YIELD	●	
ZINC	●	●
ZN		●