In this work, which is based on a PhD thesis [1] in the framework of a funded project [2], a patentometric study of Spanish nanotechnology is done for the years 2004 to 2014. We identified relevant patent classifications and combined them with an established lexical query for nanotechnology [3]. By using Espacenet data sources (DicoDB) which had the best data coverage for the purpose [4] we retrieved more than 5400 patent records with Spanish authorship. After an exhaustive data harmonization process subsequently a detailed analysis was performed using the patent statistics software tool Matheo Patent. For a patent/paper comparison furthermore we used the scientific article database Scopus.

Spain vs. World
First, Spanish patenting in Nanotechnology was compared to worldwide patenting and publishing. By launching the search query to the total worldwide database and to applicant affiliations of seven important Nano output countries (LI 2007) we could see how the Spanish nanotechnology is behaving compared to an international basis.

Two types of countries could be identified. On the one hand a group comprising the United States, Japan and South Korea where the production of patents is relatively higher than the scientific production. On the other hand a group with the opposite behaviour, which includes especially China and to a lesser extent the UK and Spain. We intervenes at 1% of the average patenting in the field of nanomedicine and nanobiotechnology. On the contrary we found a deficit in patents related to nano-optics, nano-magnetism and nanotechnologies related to information and communication technologies (ICT). In the field of materials science related to nanocomposites, production is equivalent in relative terms to the rest of the world.

Regarding the Spanish Nanotechnology thematic profile we compared it with worldwide patenting and could identify an above average patenting in the field of nanomedicine and nanobiotechnology. When we analyze the rate of internationalization in Spain, we find that the highest values are presented by the companies, whose business model is based on the protection of such innovations and therefore are willing to such an effort. Some universities appear to have higher capacity of internationalization than the CSIC centres. The institutions which really stand out are the University of Seville and the Universidade de Santiago de Compostela. Both have such a positive productive behaviour that a further study of their technology transfer offices (TTO) would be of interest.

Technology networks
Finally, by analyzing the patent classifications we could define thematically the relationships of the most important patent applicants and inventors. When we analyze the co-authoring and co-applicant behaviour of Spanish Nanotechnology patents, we could reveal collaboration patterns of institutions and researchers which are visualized via network maps.

References