











# WHY SPAIN FOR INNOVATIVE INDUSTRIES?

### Spanish Capabilities in Nanotechnology and Nanoscience

- Spanish industrial innovation system is prepared to be at the forefront of new nanotechnologies and industrial production of nanomaterials and nanoproducts in Europe, especially graphene.
- Industrial sectors as chemicals and pharmaceuticals, textiles, plastics, healthcare, electronics, auto-parts, aeronautics and other industries are gradually incorporating nanotechnologies and nanomaterials to their processes and products made in Spain.
- The number of companies and research bodies focusing on nanotechnology is growing steadily in Spain through the last years.
- Innovation Networks and Bodies. Nano-companies.
  - · NanoSpain: Spanish Nanotechnology Network (www.nanospain.org) brings together 310 research groups, 50 companies and a research task force of around 2,500 researchers and technicians. Network coordinators: Phantoms Foundation (www.phantomsnet.net) and CS/C (www.csic.es).
  - · Phantoms Foundation (www.phantomsnet.net) focuses its activities on nanoscience & nanotechnology and is a key actor in structuring and fostering European excellence and enhancing collaborations in this field.
  - · CSIC National Research Agency (www.csic.es), co-founder of the network, is the Spanish scientific body of reference working in 8 scientific areas, 130 research centers and institutes a total staff of 15,000 (8,000 scientific researchers) that have participated in 3,633 national and international projects/actions in 2012. CS/C has a wide set of technological offers in nanotechnology, industrial partnering services and collaborations for R&D&i activities.
  - Nano-companies in Spain: The catalogue of Spanish nano-companies compiled by the *Phantoms Foundation* in collaboration with ICEX Spain Trade and Investment showcases 100 innovative companies providing a general overview of the sector in Spain (catalogue: <a href="https://www.phantomsnet.net/Resources/nanodoc.php?project=1">www.phantomsnet.net/Resources/nanodoc.php?project=1</a>).
  - · Spanish Federation of Technology Centers (FEDIT) (www.fedit.com) Represents 34 technology centers all over the Spanish territory specialized in industrial innovation and technological services. FEDIT's centers are working for every productive sector.
  - · Science and Technology Parks. 77 parks hosting 6,206 technology-based companies and institutions (www.apte.org)

# NANO-RESEARCH GROUPS AND COMPANIES



### SCIENTIFIC / INDUSTRIAL INFRASTRUCTURES



# **GRAPHENE**

- In the fields of graphene research Spain occupied the 7<sup>th</sup> position in the ranking of countries in published papers (*source*: Web of science 2007-2009)
- Spanish companies are among European leaders in graphene production and exports.
- Companies like Graphenea (www.graphenea.com), Granph Nanotech (www.granphnanotech.com) or Avanzare (www.avanzare.es)
  are developing innovative processes and advanced products to supply companies as Nokia, Philips, Canon, Nissan or Sigma Aldrich.
- CDTI (Center for Industrial Technological Development) and the Spanish petrochemical multinational REPSOL have coinvested €1M in the company Graphenea to develop high quality graphene for international markets.
- Research laboratories in Spain are developing advanced products for electronic applications used by multinational companies like *TOSHIBA*.
- CSIC (Spanish National Research Agency) has more than 50 research groups in 17 centers working in nanotechnology competitive research.
- Spain is actively participating in the EU Graphene Flagship. **300 Spanish researchers** are currently working on graphene (source: CSIC Institute of Materials Science of Madrid)

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