

INSPIRED – A PROJECT TO PRINT THE FUTURE

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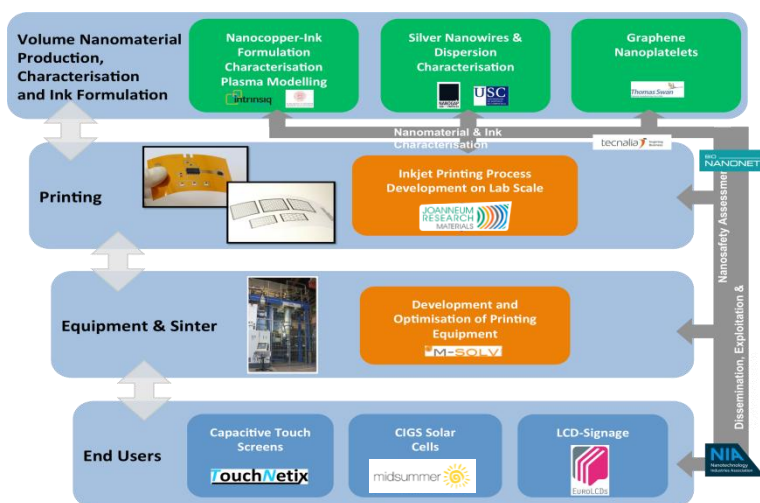
The INSPIRED project, acronym for “Industrial Scale Production of Innovative nanomaterials for printed Devices”, is funded under the EU Framework programme for Research and Innovation [HORIZON 2020](#).

The focus of INSPIRED is to fundamentally improve the current understanding of Printed Electronics (PE). PE is set to revolutionize the electronics industry over the next decade and can offer Europe the opportunity to regain lost market share. It allows for the direct printing of a range of functional ink formulations to enable a simpler, more cost-effective, high performance and high volume printing processing in comparison to traditional circuit board and semiconductor manufacturing techniques. The move towards low-cost, liquid-based, high throughput techniques, such as inkjet printing, requires that suitable functional inks are available for end users. Presently there are issues with the supply of industrially relevant quantities of nanomaterials which are low cost, high performance, environmentally friendly and tailored for high throughput systems. INSPIRED will address these challenges.

By covering the whole value chain from nanomaterial synthesis and scale-up over printing process R&D and equipment manufacture to applications development, the INSPIRED partners will ensure the availability of nano-based functionalised inks in industrial scale quantities and enable rapid and high-throughput production of novel printed electronic components on a wide variety of substrates.

In detail, the INSPIRED project will develop the following Pilot lines

- **Materials, their formulations and scale-up:**
 - From synthesis to formulation
 - Nano-copper
 - Ag Nanowires
 - Graphene materials
- **Processes:**
 - High-volume printing and sintering including development of pilot equipment
 - Development of simplified manufacturing process (One step Interconnect, OSI) as an alternative PV interconnect method
- **Devices (exemplar applications):**
 - Capacitive touchscreens using copper inks / AgNWs
 - LCD system using conductive inks - LC Display demonstrator
 - CIGS cells using copper inks / AgNWs/GNPs



The partners in the project, which has a duration of four years, come from academia, industries and organisations in 7 European countries and are experts in their fields, covering nanomaterial synthesis and scale-up, ink formulation, high throughput printing, equipment manufacture and process engineering, nanosafety assessment, process and post-process characterisation of nanomaterial inks and components as well as touchscreen display, LCD and CIGS PV cell design and manufacture. The project coordinator is Joanneum Research Forschungsgesellschaft mbH (Austria), who is supported by Intrinsic Materials Ltd (UK). Further partners are NanoGap Sub-nm-Powder S.A. (Spain), M-Solv Ltd (UK), Thomas Swan & Co Ltd (UK), BioNanoNet

Forschungsgesellschaft mbH (Austria), Touchnetix Ltd (UK), Midsummer (Sweden), EuroLCDs (Latvia), Nanotechnology Industries Association (Belgium), Alma Mater Studiorum-Università di Bologna (Italy), Fundacion Tecnalia Research & Innovation (Spain) and University of Santiago de Compostela (Spain).

Tecnalia's role in the project is devoted to the re-formulation and characterization of graphene inks, as well as settling the optimization of different processes like nanoAg coatings, screen-printing, ink-jet printing and sintering of Cu pastes and inks.

Further information on the INSPIRED project can be found at the project website: www.nanoinspired