

PRESS RELEASE

New Spanish initiative tackles the energy challenge.

A consortium of Spanish research groups is developing new nano-scale artificial materials for use in thermoelectric generators.

Bellaterra (Barcelona), Spain, 18 March 2011.

To meet the energy conversion challenge, nine research groups from across Spain have come together in a unified research effort called *Tailoring Electronic and Phononic Properties of Nanomaterials; Towards Ideal Thermoelectricity*, **nanoTHERM**. The **nanoTHERM** consortium will carry out research and development in new nanometer-scale artificial materials and structures with improved thermoelectric efficiency. These have widespread applications in the chemical, automotive and construction industries as well as in electrodomestic appliances, air conditioning systems and Peltier cells.

Thermoelectric materials turn heat into electricity. Useful applications include utilising waste heat, for example turning heat from a car exhaust into electricity to power other parts of the vehicle. They can also transform electrical power into cooling or heating. For this reason they are strategic materials for energy harvesting devices, zero-emission generators and in general for renewable energy technologies. However, despite considerable worldwide efforts over the last 20 years, the efficiency of such materials has not reached sufficiently high value for them to be widely used.

nanoTHERM, coordinated by the Phononic and Photonic Nanostructures Group, lead by ICREA Prof. Dr. Clivia Sotomayor Torres at the Catalan Institute of Nanotechnology (ICN) in Barcelona, will develop new nano-scale thermoelectric materials and composites, which have to be simultaneously good thermal isolators and good

electrical conductors, for use in thermoelectric generators for low and high temperature operation. The work will span the full value chain from theory on thermal conductivity at the nanometer scale, through material design, synthesis and benchmarking to device validation. New theoretical and experimental tools will have to be developed in order to achieve the final goal; to develop next-generation thermoelectric materials and devices suitable for mass production at an economic scale for a broad range of applications.

On Friday 11th of February 2011 nanoTHERM held its kick-off meeting in the Torre Vila-Puig at the campus of the Universitat Autònoma de Barcelona in Bellaterra. 31 scientists, engineers and industrialists met to discuss the project implementation and R&D advances since the proposal was submitted.

About nanoTHERM

(www.nanotherm.es)

The nanoTHERM project consortium is composed of nine Spanish teams from academia, technology centres and industry; the Catalan Institute of Nanotechnology, the Polytechnic University of Catalonia, the CSIC Institute of Materials Science of Barcelona, the University of Valencia, LEITAT Technological Centre, the Autonomous University of Barcelona, the CSIC National Centre for Metallurgical Research, the Basque Country University and the CSIC Microelectronics Institute of Madrid. The latter will join the consortium in 2012.

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nanoTHERM project contact details:

Dr Erwan Guillotel (project manager)

Phone: +34 93 586 8428

Email: erwan.guillotel@icn.cat

www.nanotherm.es