

The Universitat Jaume I promotes European research in nanotechnology to improve energy efficiency

The Nanouptake project has created a network of companies and universities in 25 countries to foster the study of domestic and industrial nanofluids

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The Universitat Jaume I (UJI) has promoted European research in the field of nanotechnology to improve energy efficiency in both domestic and industrial processes. The European project Nanouptake, led by the Department of Mechanical Engineering and Construction, has just concluded after creating a network of companies and universities in 25 countries with more than 500 participants to encourage the study of a new generation of substances known as 'nanofluids'.



This European project, which ended this month of May, "has allowed the creation of a strong and very active European network in the development of nanofluids as new materials to face current scientific and technological challenges, such as

energy efficiency in a wide spectrum of industrial applications and the generation of new, more efficient systems for capturing solar energy", says Leonor Hernández, a lecturer of Fluid Mechanics and coordinator of the COST Action Nanouptake.

The COST Action Nanouptake (Overcoming Barriers to Nanofluids Market Uptake), whose creation was led by the lecturer Enrique Julià Bolívar, has been working for four years on research into these new substances that will help reduce the greenhouse gas emissions responsible for global warming and climate change.

Nanofluids, a product of the emerging world of nanotechnology, are suspensions of nanoparticles (smaller than 100 nm) in conventional fluids such as water, oils or glycols. This combination also allows the properties of both elements to be combined, thus improving the properties of the fluid and the efficiency of the energy processes in which they are used. In this way, nanofluids can make industrial and domestic applications more efficient where heat transfer processes (heating, cooling) with and without phase change, thermal energy storage, radiation absorption and conversion, etc. are involved.

Nanouptake, funded through the COST programme (European Cooperation in Science and Technology), has fostered a wide range of activities focused on strengthening the network of experts, thus providing training opportunities for new researchers and boosting ongoing research. To this end, 75 grants have been financed for stays of researchers in laboratories in other countries of the network, 17 grants to attend conferences, and three training schools with more than 100 participants and five workshops on the subject attended by more than 360 people have been arranged.

Among these actions, the organisation of the First International Congress on Nanofluids (ICNf2019) held in June 2019 at the UJI stands out. This meeting, which was attended by 200 participants from 45 different countries on five continents, hosted the presentation of more than 150 papers on nanofluids, thus turning Castelló de la Plana into the world capital of this research.

CONNECTION WITH THE MARKET

Nanouptake's various lines of action have resulted in more than 150 scientific publications, as well as requests for more than 15 research projects as a result of the collaborations established during the development of the network, which have made it possible to continue promoting the development of these materials and bringing them closer to the industrial world for their practical application. Among these projects, and after the success of the initiative, "the Nanouptake network has prepared a new European project, NANOConVEX, whose objective is to bring the most promising research of these years of work to the market," points out the lecturer and researcher Leonor Hernández.

Although Nanouptake's funding now ends after four years, the network of researchers made up of more than 45 research groups and consolidated during this time remains committed to advancing research into nanofluids within energy applications. Furthermore, with a special focus on the European Union's 2030 climate and energy goals: 40% reduction of greenhouse gas emissions responsible for global warming, 32% share of renewable energies and improvement of energy efficiency by 32.5%.

Further information of Nanouptake : http://www.nanouptake.eu/

Action COST Nanouptake video

Information provided by: Communication and Publications Service