

German-Greek Cooperative Project “WasserMod” Ends with Success

In the “WasserMod” project, research teams from Germany and Greece performed experimental investigations and computer simulations in order to learn more about water diffusion in microporous adsorbents. Three project partners worked together in the research team: the Fraunhofer Institute for Solar Energy Systems ISE, the University of Leipzig and the National Technical University of Athens (NTUA). The project ended in 2015 after a duration of two years; a follow-up project is planned. The project results shall now be transferred to the application phase and used for optimizing heating and cooling systems in cooperation with industry.

Adsorbents such as active carbon, silica gel and zeolite are characterized by extremely high porosity. Also, they all have a large inner surface area to which gases or dissolved substances can bind. Such materials are key to numerous technical applications, for example, for gas storage and separation, or in thermally driven heat pumps and chillers. Over the past two years, the bilateral project “WasserMod” was dedicated to investigating the mass transport in such materials, e. g. metal organic frameworks (MOFs) or SAPO-34. Using pulsed field gradient nuclear magnetic resonance and micro-imaging, the research team was able to measure the diffusion coefficient of water in SAPO-34 for the first time – a property that can have a large influence on the adsorption process.

At the end of the project, a workshop was held to summarize the results and discuss the future perspectives and issues for thermally driven heat pumps. The experts foresee many applications for the future, e. g. cooling systems driven by solar or waste heat, compact heat storage but also the energy efficient provision of heat from a gas-

powered heat pump. The “WasserMod” project will especially be remembered by three young scientists for a long time: Dr. Gerrit Földner, project leader at Fraunhofer ISE, Panagiotis Kolokathis, doctoral student at the National Technical University of Athens and Tobias Splith, doctoral student at the University of Leipzig. At the concluding workshop, these three received first place in the poster contest and will soon travel to research institutes in the partner countries within the scope of this prize.

German-Greek Research Initiative

The “WasserMod” project (Water sorption in porous solids: Experimental investigations and computer simulations on the equilibrium and transport rates for adsorptive heat transformation) was one of twenty-three projects that the German Federal Ministry for Education and Research (BMBF) and the Greek Ministry for Education and Religious Affairs initiated on January 1, 2014. Both countries selected proposals from a total of 400 entries. For all projects, a total of 10 million euros was made available. The projects were carried out for the duration of two years.

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Three young scientists have been awarded for their research work in the "WasserMod" project: Dr. Gerrit Földner (second from the left), Fraunhofer ISE, Tobias Splith (second from the right), Leipzig University, and Panagiotis Kolokathis (not on the photo), National Technical University of Athens, received first place in the poster contest from Thomas Rachel (first from the right), Federal Ministry of Education and Research/Germany, and Costas Fotakis (first from the left), Greek Research Ministry.
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