Dr. Michael HIRSCHER

Max Planck Institute for Intelligent Systems
(Stuttgart – Germany)

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IMCN / iMMC SEMINAR

« Hydrogen Storage in Nanoporous Materials»

Wednesday 15 May 2019 – 02:00 pm
Auditorium BARB92
Place Ste. Barbe, 1, 1348 Louvain-La-Neuve

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ABSTRACT

The change from a fossil fuel-based energy economy to one based on renewable energy sources requires an easy and reliable method of storing energy, since renewables have daily and seasonal fluctuations. Chemical storage seems to be the best solution, and here hydrogen has gained major importance as an energy carrier. Today, hydrogen is typically stored as gas under high pressures up to 70 MPa, however, hydrogen storage in solid materials or in liquid hydrogen carriers are alternatives that can lead to higher storage densities under drastically reduced pressure. Hydrogen is either chemically bound, in hydrides or in liquid hydrogen carriers, or physically bound in porous materials. After a general introduction, this talk will focus on physical adsorption of hydrogen molecules on high-surface-area, porous materials for storage in cryo-adsorption tanks. The development of metal-organic frameworks (MOFs) with extremely high specific surface areas has pushed this field resulting in very high gravimetric storage densities at cryogenic temperatures.

BIOGRAPHY

Michael Hirscher is group leader “Hydrogen Storage” at the Max Planck Institute for Intelligent Systems, Stuttgart, Germany. He studied physics at University of Stuttgart, Germany and at Oregon State University, Corvallis, USA, receiving his PhD in Stuttgart. In 1988 he was awarded with the Otto-Hahn-Medal of the Max-Planck-Society. From 2013 to 2018 he has been Operating Agent of Task 32 “Hydrogen-based Energy Storage” in the Hydrogen Implementing Agreement of the International Energy Agency (IEA) and now is leading the new IEA Hydrogen Task 40 “Energy storage and conversion based on hydrogen” since 2019. He has been vice chair of the Gordon Research Conference on Hydrogen-Metal Systems in 2017 and is the chair in 2019.
Michael Hirscher is the recipient of Otto Hahn medal of the Max Planck Society and of the “Hydrogen & Energy Award 2015”. About 10'000 citations, h index 42, the author of the famous book "Handbook of hydrogen storage: new materials for future energy storage".

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