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INSTITUTO DE FÍSICA APLICADA E ENGENHARIA DE MATERIAIS
INSTITUTE OF APPLIED PHYSICS AND MATERIALS ENGINEERING

IAPME Seminar

Advanced Electrocatalysts for Hydrogen Production via Water Electrolysis

Prof. Lifeng LIU

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Date: 28/11/2023; Time: 10:00 – 11:00; Venue: N23-4018

Hydrogen is an important vector that can help decarbonize many hard-to-abate industries, contributing to the realization of carbon neutrality. Renewable energy-driven water electrolysis has now been widely accepted to be a promising approach to "green" hydrogen production, and the water electrolysis industry is currently booming worldwide. Electrocatalysts represent essential components in water electrolyzers and critically determine the device's performance. Developing highly-efficient, cost-effective and durable electrocatalysts is crucial to widespread deployment of water electrolyzers on a scale commensurate with the global demand. In this presentation, the speaker will give an overview of recent progress in his group toward the development of high-performance electrocatalysts, including 1) transition metal phosphide nanostructures for alkaline water/seawater electrolysis; 2) platinum group metal (PGM) and non-PGM catalysts for proton exchange membrane water electrolysis; 3) atomically dispersed catalysts and 4) bipolar membrane water electrolysis. An outlook about future development of electrocatalysts will be given in the end.

Prof. Lifeng LIU (Researcher ID: A-2522-2012, Orcid ID: 0000-0003-2732-7399) received both his MS (2004) and PhD (2007) degrees in Condensed Matter Physics from the Institute of Physics, Chinese Academy of Sciences (IOP-CAS). He joined Max Planck Institute of Microstructure Physics – Halle (MPI-Halle), Germany in 2007, first working as a postdoctoral researcher and then as a staff scientist. He started his independent research career in 2008 and became a Group Leader in 2009. In 2011, he moved to the International Iberian Nanotechnology Laboratory (INL) and set up a research group there. In 2022, he was supported by the Overseas Talent Programme, the Ministry of Science & Technology of China, and joined Songshan Lake Materials Laboratory (SLAB) as Staff Scientist and Group Leader. Meanwhile, he remains a Scientific Associate and Adjunct Group Leader at INL. Prof. Liu has been actively working on nanomaterials and nanostructures since 2002, with particular emphases on fabrication and characterization of complex nanostructures, nano-magnetism, nanoscale solid-state reactions, ferroelectric nanostructures and energy materials. His present interest mainly focuses on nanomaterials for renewable energy generation, storage, and conversion.

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