

Colloquium

Tailoring the interfaces of electrochemical energy systems for storage and conversion

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Abstract

Electrochemical energy systems are a key technology for a sustainable society. They allow to store or retrieve electrical energy, or to use it to drive a chemical reaction and are thus ideally suited to be powered by renewable energy sources. Prominent examples are Li-Ion batteries, fuel cells or electrolysis. In all these devices, interfaces play a major role, especially that of the electrode and the mostly polymeric electrolyte (membrane). The electrochemical energy systems group is dedicated to integrating latest material developments into so-called “membrane-electrode-assemblies” (MEA), which mainly determine the performance and lifetime of the electrochemical device. This talk will give a short overview on the activities of the group in fuel cells and electrolysis. It will cover latest developments in proton exchange membrane technologies and show why anion exchange based systems become increasingly popular.

Brief Bio

Dr. Severin Vierrath graduated in 2010 from RWTH Aachen University in industrial engineering. In his PhD thesis he investigated polymer electrolyte fuel cells at the department of microsystems engineering IMTEK, University of Freiburg. Since 2018 he is heading the junior research group “Electrochemical Energy Systems” at the University of Freiburg and Hahn Schickard research institute together with his colleague Dr. Matthias Breitwieser. The group includes today 20 researchers, PhDs and M.Sc / B.Sc. students. He has authored more than 30 research articles and won several prizes, amongst all the renowned F-Cell Award. In 2019 he received a 1M€ grant for a junior research group by the Vector foundation.

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