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CEEC JENA

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Jena, 27. August 2019

# EINLADUNG

Am Mittwoch, **18. September 2019**, spricht um **11:00 Uhr**
Im Konferenzraum des ZAF, Philosophenweg 7,
07743 Jena

## *Herr Prof. Dr. Michael J. Aziz*

*Harvard John A. Poulson School of Engineering and Applied Sciences, Cambridge, MA (USA)*

zum Thema

## "Organic Aqueous Flow Batteries for Massive Electrical Energy Storage"

gez. Prof. Dr. Ulrich Schubert

Alle Interessenten sind herzlich eingeladen.

Es handelt sich um eine Veranstaltung des Center for Energy and Environmental Chemistry Jena (CEEC Jena) der FSU Jena.

# Organic Aqueous Flow Batteries for Massive Electrical Energy Storage

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The ability to store large amounts of electrical energy is of increasing importance with the growing fraction of electricity generation from intermittent renewable sources such as wind and solar. Flow batteries show promise because the designer can independently scale the power (electrode area) and energy (arbitrarily large storage volume) components of the system by maintaining all electro-active species in fluids. Wide-scale utilization of flow batteries is limited by the abundance and cost of these materials. We have developed an approach to electricity storage in flow batteries using the aqueous redox chemistry of small, inexpensive organic and organometallic molecules. This new approach may enable massive electrical energy storage at greatly reduced cost.

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http://aziz.seas.harvard.edu/electrochemistry

**Curriculum vitae**

**Michael J. Aziz** earned a Bachelor of Science degree in Applied Physics from the California Institute of Technology and a Master of Science degree from Harvard University. For his Ph.D. in Applied Physics at Harvard he stuied studying crystal growth kinetics under the supervision of David Turnbull. He spent two years at Oak Ridge National Laboratory as a Eugene P. Wigner Postdoctoral Fellow, where he studied materials processing with ion and laser beams. Aziz has been on the faculty at what is now the Harvard John A. Paulson School of Engineering and Applied Sciences since 1986, and is now the Gene and Tracy Sykes Professor of Materials and Energy Technologies.

Aziz has made several contributions to the fields of applied physics and materials science. He was awarded the Bruce Chalmers Award by TMS "For basic theoretical and experimental contributions to the understanding of solute trapping, laser processing, and ion beam modifications of surfaces". He has been elected a Fellow of the AAAS "For seminal studies of the non-equilibrium atomic-scale mechanisms underlying modern materials processing techniques", a Fellow of the APS "For unique experimental and theoretical contributions to our understanding of the kinetics of crystal growth in covalent systems, and of solute trapping in rapid solidification processing", and a Fellow of the MRS "For innovative contributions to our understanding of the kinetics of nonequilibrium phenomena in materials and for dedication to MRS and the materials community". He is the co-recipient of the 2019 Energy Frontiers Prize from Eni.

As the energy-climate problem has become more urgent, the research interests of Professor Aziz have shifted to energy storage and $CO_2$ capture. He has directed a multi-investigator research program on stationary electrical energy storage since 2012 and is co-inventor of the aqueous organic redox flow battery, with multiple patents that have been licensed for commercialization. He was the faculty coordinator for the Harvard University Graduate Consortium on Energy and Environment from 2009 to 2018. He developed an energy technology course for a broad audience and is currently authoring a textbook on energy technology.