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Gegründet im Jahre 1869 von H. Hlasiwetz, J. Loschmidt, J. Petzval und J. Stefan

EINLADUNG

zum Vortrag
von

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Electrical Double Layer Technologies: A Versatile Platform for Energy and Water Treatment

am
Dienstag, 4. März 2014, um 17:30 Uhr

Ort: Christian-Doppler-Hörsaal, Fakultät für Physik, Universität Wien,
1090 Wien, Strudlhofgasse 4 / Boltzmanngasse 5, 3. Stock

**********Bitte Hörsaal beachten**********

Barrierefreier Zugang: Boltzmanngasse 5, Lift, 3. Stock rechts über den Gang zum Hintereingang des Hörsaals

Abstract:
The electrical double-layer is a uniquely suitable phenomenon to serve as a versatile technology platform for efficient energy storage, improved and sustainable actuators, to generate electrical energy by harvesting devices, and to recover and for advanced water treatment technologies. The main research activities focus on energy storage technologies based on rapid ion electrosorption, so called supercapacitors. These devices play a major role in advancing fast power management and highly efficient storage and are currently under heavy investigation worldwide. Moreover, advanced supercapacitors, with their high power density, long cycling life, and reliable performance, offer the potential to operate in a very wide temperature range (from -50°C to more than 100°C). They are also completely based on “green” materials with very low ash content. Instead of viewing electrosorption as an energy concept, one can also utilize it for ion immobilization to devise highly efficient salt water treatment facilities. The latter are in high demand to minimize the environmental impact of the agriculture and mining industry, to name a few, and to provide potable water from brackish water sources to millions of people. Finally, selective ion-adsorption is strongly associated with volumetric changes that are not necessarily detrimental but can be exploited for highly efficient, low maintenance actuators. For all these applications a range of optimized nanomaterials are being developed – from activated carbons, polymer- and carbide-derived carbons, and carbon onions to hybrid materials that combine properties of polymers, ceramics, carbons, and metal oxides or nitrides. The plethora of materials and the focus on technical systems are complemented with a suite of comprehensive in situ characterization techniques to investigate, monitor, and understand nanoscale effects at the interface between the electrolyte and electrically charged surfaces.