

# Prof. Dr. Volker Presser

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## CURRENT APPOINTMENT (SINCE 12/2015)

**Full Professor (W3),** Saarland University, Saarbrücken, Germany  
**Program Division Leader,** INM - Leibniz Institute for New Materials, Saarbrücken, Germany

## PAST APPOINTMENTS

- 04/2013-11/2015: **Assistant Professor**, Saarland University, Saarbrücken, Germany
- 06/2012-11/2015: **Junior Research Group Leader**, INM - Leibniz Institute for New Materials, Saarbrücken, Germany
- 07/2011-05/2012: **Research Assistant Professor**, Drexel University, Philadelphia, USA
- 01/2010-12/2011: **Humboldt Research Fellow**, Drexel University, Philadelphia, USA

## ACADEMIC DEGREES

- 06/2009: **Dr. rer. nat. (Doctor of Natural Sciences)**, Eberhard Karls University, Tübingen, Germany (SUMMA CUM LAUDE)
- 02/2006: **Dipl.-Min. (Diploma in Mineralogy)**, Eberhard Karls University, Tübingen, Germany (MAGNA CUM LAUDE)

## FIVE SELECTED PUBLICATIONS

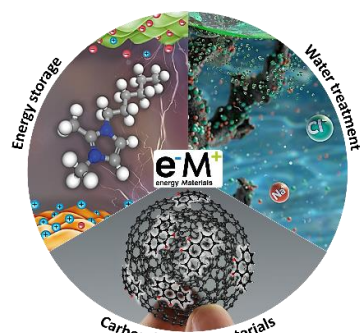
Currently >190 peer reviewed papers with >10,000 citations (**h-index: 47**)

- Lee, Srimuk, Fleischmann, Su, Hatton, Presser, "REDOX-ELECTROLYTES FOR NON-FLOW ELECTROCHEMICAL ENERGY STORAGE: A CRITICAL REVIEW AND BEST PRACTICE" **Progress in Materials Science**. 2019;101:46.
- Prehal, Koczwarra, Jäckel, Schreiber, Burian, Amenitsch, Hartmann, Presser, Paris, "QUANTIFICATION OF ION CONFINEMENT AND DESOLVATION IN NANOPOROUS CARBON SUPERCAPACITORS WITH MODELLING AND IN-SITU X-RAY SCATTERING" **Nature Energy**. 2017;2:16215.
- Shpigel, Levi, Sigalov, Girshevitz, Aurbach, Daikhin, Pikma, Marandi, Jänes, Lust, Jäckel, Presser, "IN SITU HYDRODYNAMIC SPECTROSCOPY FOR STRUCTURE CHARACTERIZATION OF POROUS ENERGY STORAGE ELECTRODES" **Nature Materials**. 2016;15:570-575.
- Suss, Porada, Sun, Biesheuvel, Yoon, Presser, "WATER DESALINATION VIA CAPACITIVE DEIONIZATION: WHAT IS IT AND WHAT CAN WE EXPECT FROM IT?" **Energy & Environmental Science**. 2015;8:2296-2319.
- Prehal, Weingarth, Perre, Lechner, Amenitsch, Paris, Presser, "TRACKING THE STRUCTURAL ARRANGEMENT OF IONS IN CARBON SUPERCAPACITOR NANOPORES USING IN-SITU SMALL-ANGLE X-RAY SCATTERING" **Energy & Environmental Science**. 2015;8:1725-1735.

## SELECTED AWARDS AND HONORS

- Fellow of the Royal Society of Chemistry. 2020
- ARCHES Award of the Minerva Foundation. 2016
- Foundation Award of the Prof. Lenz Foundation. 2015
- Innovator of the Year & TR35 Award of Technology Review Germany. 2015
- Ross Coffin Purdy Award of the American Ceramic Society (ACerS). 2013
- Heinz Maier Leibnitz Prize of the German Research Foundation (DFG). 2013
- Early Excellence in Science Award in Materials Science of the Bayer Foundation. 2012
- Dissertation Award of the Eberhard Karls Universität Tübingen. 2010
- Bernd Rendel Prize of the German Research Foundation (DFG). 2008

## RESEARCH AND TECHNOLOGY OF ENERGY MATERIALS



The Energy Materials Group **synthesizes, characterizes, and applies functional nanomaterials**. We use electrochemical mechanisms to enable **energy storage** (supercapacitors, redox electrolytes, batteries), and **water treatment** (desalination, ion separation). The foundation is the highly reversible ability of electroactive materials to immobilize ions via electrosorption, ion insertion, or conversion reactions. **Carbon materials** and **nanohybrids** are the most important electrode materials, and we utilize non-porous carbon nanoparticles (carbon onions, carbon black) and nanoporous carbon materials (activated carbons, carbide-derived carbon, polymer-derived carbon, carbon nanofibers) to obtain electrodes for electrochemical applications. **Redox electrolytes** capitalize on the rapid charge transfer when in nanoconfined to create storage devices of combined high power and energy ratings. We focus on a comprehensive array of materials characterization techniques and **in-situ methods** to gain novel insights into electrochemical processes. Our contributions extend from basic research, materials synthesis, and the refinement of testing procedures to **industrial collaboration** and technology development. We are inspired by the motto: Explore! Create! Apply!

## SELECTED RESEARCH KEYWORDS

- Carbon and hybrid nanomaterials
- Electrochemical energy storage
- Electrochemical water treatment

