Prof. Dr. Volker Presser (FRSC)

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CURRENT APPOINTMENTS

Managing Director	SAARENE - SAARLAND CENTER FOR ENERGY MATERIALS & SUSTAINABILITY, Saarbrücken, Germany (SINCE 06/2021)
Full Professor (W3)	SAARLAND UNIVERSITY, Saarbrücken, Germany (SINCE 12/2015)
Program Division Leader	INM - LEIBNIZ INSTITUTE FOR NEW MATERIALS, Saarbrücken, Germany (SINCE 12/2015)
Editor-In-Chief	ENERGY ADVANCES (*Royal Society of Chemistry*; SINCE 12/2015)

PAST APPOINTMENTS

- 04/2013-11/2015: **Assistant Professor (W1)**, 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

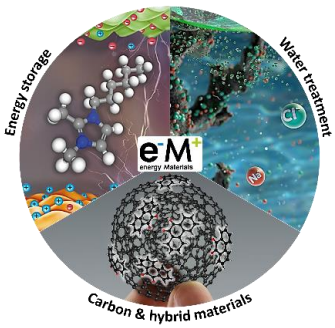
Currently >250 peer reviewed papers with >23,000 citations without self-citations (h-index: 60)

- Fleischmann, Zhang, Wang, Cummings, Wu, Simon, Gogotsi, Presser, Augustyn, "CONTINUOUS TRANSITION FROM DOUBLE-LAYER TO FARADAIC CHARGE STORAGE IN CONFINED ELECTROLYTES", Nature Energy 7[3]: 222-228 (2022).
- Wang, Velasco, Breitung, Presser, "HIGH-ENTROPY ENERGY MATERIALS IN THE AGE OF BIG DATA: A CRITICAL GUIDE TO NEXT-GENERATION SYNTHESIS AND APPLICATIONS", Advanced Energy Materials, 11[47]: 2102355 (2021).
- Srimuk, Su, Yoon, Aurbach, Presser, "CHARGE-TRANSFER MATERIALS FOR ELECTROCHEMICAL WATER DESALINATION, ION SEPARATION, AND THE RECOVERY OF ELEMENTS" Nature Reviews Materials, 5[7]: 517-538 (2020).
- Lee, Srimuk, Fleischmann, Su, Hatton, Presser, "REDOX-ELECTROLYTES FOR NON-FLOW ELECTROCHEMICAL ENERGY STORAGE: A CRITICAL REVIEW AND BEST PRACTICE", Progress in Materials Science 101[1]: 46-89 (2019).
- Prehal, Koczwara, 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, 2[3]: 16215 (2017).

SELECTED AWARDS AND HONORS

- Highly Cited Researcher, Web of Science Group. *2021 & 2018*
- Zhaowu Tian Prize for Energy Electrochemistry, International Society of Electrochemistry. *2022*
- Fellow of the Royal Society of Chemistry (RSC). *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



We **synthesize**, **characterize**, and **apply functional nanomaterials**. We use **electrochemistry** to enable, among others, **energy storage** (supercapacitors, redox electrolytes, batteries), **water treatment** (desalination, pollutant removal), and **tailored ion recovery** (esp. Lithium recovery). The foundation is the highly reversible ability of electroactive materials to immobilize ions via electrosorption and redox processes. **Carbon materials**, **layered materials** (e.g., MXene), and **hybrids** are promising materials with tunable structure, composition, and electrochemical properties. **Redox electrolytes** capitalize on the rapid charge transfer when in nanoconfined to create storage devices of combined high power and energy ratings. Combined with material characterization techniques, we use **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 also implement the development of sustainable synthesis and materials along with **recycling**, **up-cycling**, and second life applications. We are inspired by the motto: Explore! Create! Apply!

SELECTED RESEARCH KEYWORDS

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

e-M+ energy Materials INM Leibniz Institute for New Materials