



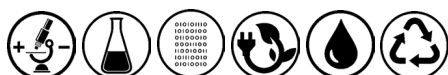
## PROF. DR. VOLKER PRESSER

CHAIR OF ENERGY MATERIALS

### RESEARCH PROFILE

We synthesize, characterize, and apply **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 electroadsorption and redox processes. **Carbon materials**, **2D materials** (e.g., **MXene**, **MBene**), and **hybrids** are promising materials with tunable structure, composition, and electrochemical properties. Redox electrolytes capitalize on rapid charge transfer when nanoconfined to create storage devices of 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.

Explore! Create! Apply!



### CONTACT

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### CURRENT APPOINTMENTS

- **Editor-In-Chief** · ENERGY ADVANCES, *Royal Society of Chemistry, United Kingdom*; SINCE 08/2021
- **Full Professor (W3)** · SAARLAND UNIVERSITY, Saarbrücken, Germany; SINCE 12/2015
- **Research Department Leader** · INM - LEIBNIZ INSTITUTE FOR NEW MATERIALS, Saarbrücken, Germany; 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 TITLES

- 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)

### SELECTED AWARDS AND HONORS

- **Highly Cited Researcher**, *Web of Science Group*. 2023, 2022, 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

### FIVE SELECTED PUBLICATIONS

Currently, over 280 peer-reviewed papers with over 31,000 citations without self-citations (h-index: 70)

- 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, 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*, 2[3]: 16215 (2017).