

OUR RESEARCH

Three research areas with one common goal

- Avoidance of critical raw materials like aggressive acids, rare earth elements, vanadium, cobalt, lead and other heavy metals
 - ⇒ Optimal environmental compatibility
- Use of alternatives available in Germany or Europe such as polymers, glasses, ceramics, carbons, (in-)organic molecules
 - ⇒ Dependable availability of resources

Energy Storage

Materials research on alternative storage systems:

- Organic batteries and Polymer-Redox-Flow batteries
 - ⇒ DFG SPP 2248 Polymer-based batteries
 - ⇒ EU ETN POLYSTORAGE
- Solid-state and high-temperature batteries
- Supercapacitors

Light-Energy Conversion

- Photocatalytic water splitting
 - ⇒ DFG CRC/TRR 234 CataLight
- Organic photovoltaic technologies
- “Smart windows”
- Power-to-X technologies (methane, methanol, synthetic fuels)

Clean Tech

- Water treatment (advanced oxidation processes, membrane technology, adsorption, material recovery)
- Exhaust gas treatment (membrane technology, catalysis)
- Environmental monitoring (sensor technology)
- Cavitation (acoustic/hydrodynamic)
- Anti-fouling surfaces

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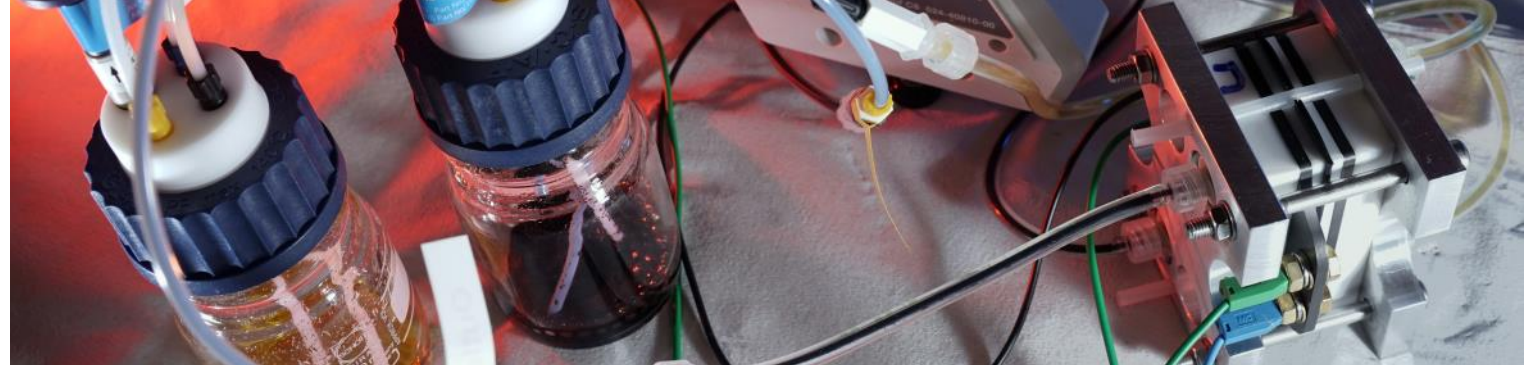


THE CEEC JENA

On 11 December, 2019 the new EU Commission President Ursula von der Leyen presented the European Green New Deal according to which Europe is to become climate neutral by 2050. A key consideration of the transition towards renewable energy is the fluctuation in power generation which comes with an inconstant energy source (i.e., sun and wind). These fluctuations have to be balanced by energy storage systems. In the long term, next generation energy storage materials are needed to meet the challenges of an increasingly complex energy supply.

To address this we are developing electrochemical energy storage systems based on environmentally friendly raw materials sourced from within Germany and Europe. Innovative ideas are often created by looking beyond the horizon of one's own field of expertise. That is why CEEC Jena pools together the know-how of topic-relevant professorships and groups from the Faculty for Chemistry and Earth Sciences and the Faculty of Physics and Astronomy of the Friedrich Schiller University Jena as well as the Fraunhofer Institute for Ceramic Technologies and Systems IKTS Hermsdorf as a non-university initial partner in research and teaching.

The CEEC Jena offers excellently equipped laboratories for the production of various materials, such as polymers, glasses, ceramics, carbons, organic molecules, two-dimensional materials and nanoparticulate semiconductors. Furthermore, researchers have access to excellent facilities for characterizing these materials and complete cells in order to study batteries, supercapacitors and solar cells in detail.



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»Climate change is moving much faster than we are. [...] We are in a war for the very existence of life on our planet as we know it, but we have an important ally – science and technology.«

António Guterres
Secretary-General of the United Nations