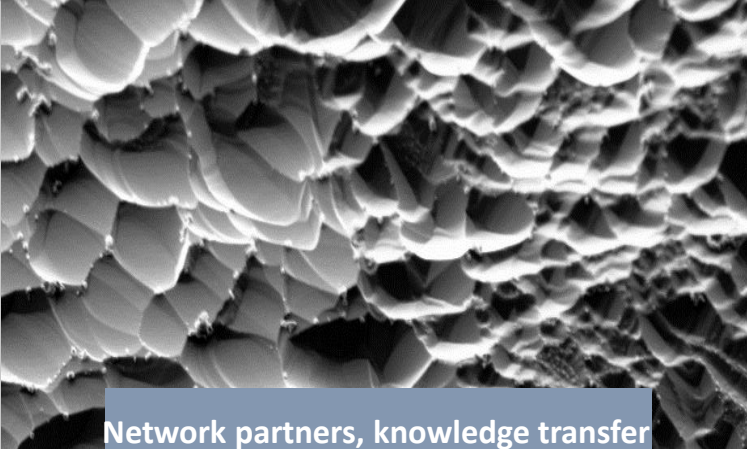


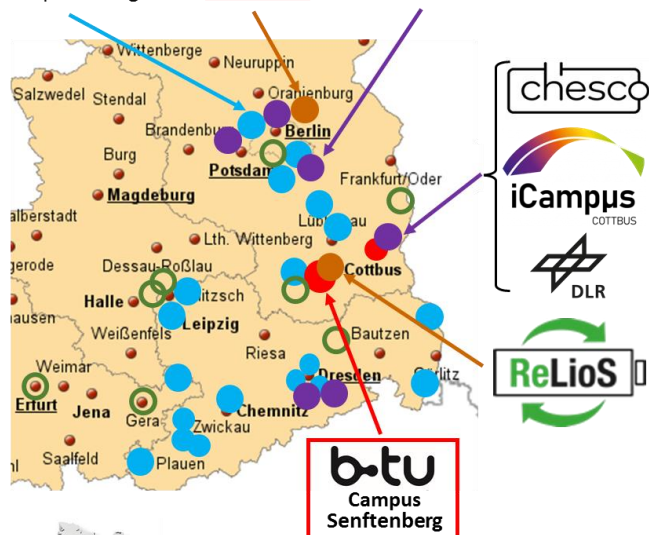


Get in touch with us,
to find out more about our
research activities!

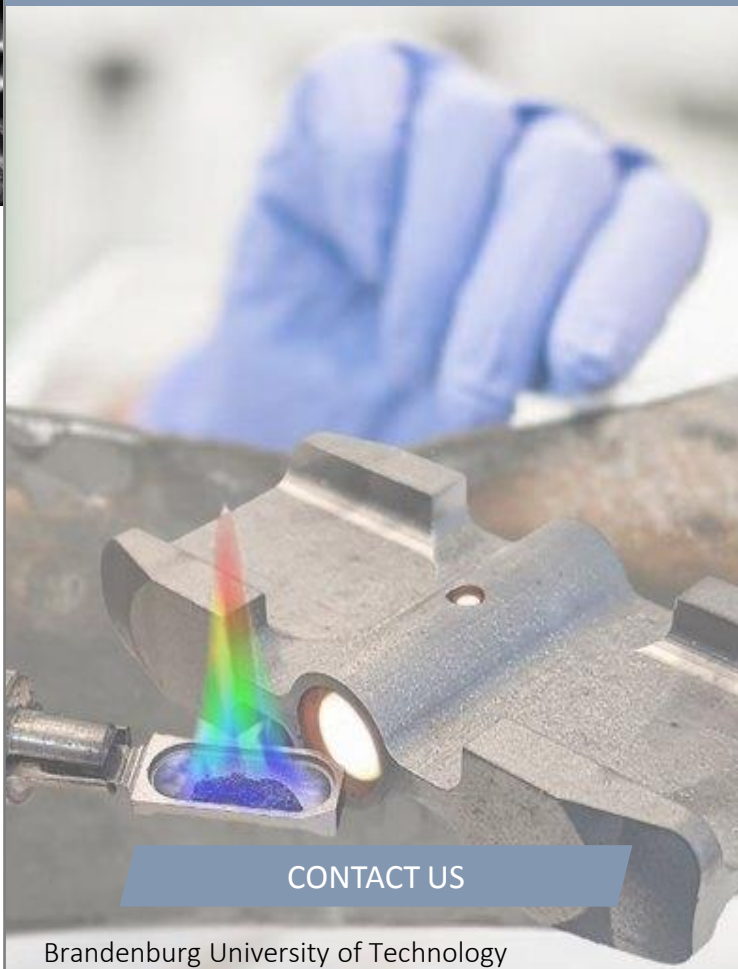
Network partners, knowledge transfer
and co-operation

Using synergies and being successful together.

KOMBIH -
Kompetenzaufbau für
Batteriezellfertigung in
der Hauptstadtregion



- BTU Cottbus - Senftenberg
- Contact / Project partner
- Network partners
- Research institution
- Potential industry partner



CONTACT US

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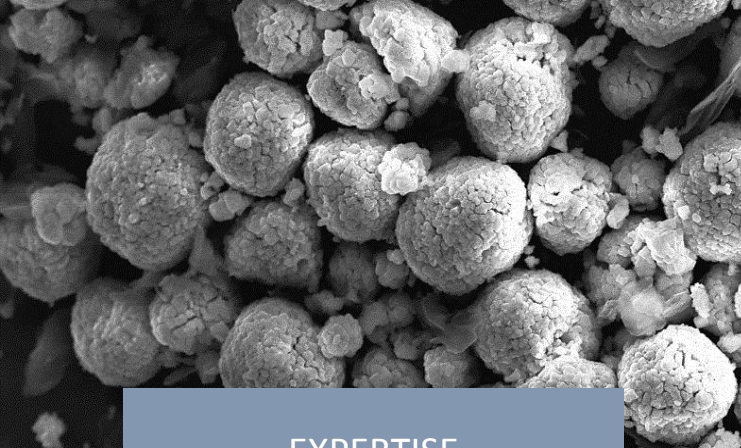
Department of Physical Chemistry



Your contact for

Materials chemistry
Battery recycling
Silicon chemistry
Chemical analytics





EXPERTISE

... in chemical analysis and material analysis

- Development of new digestion and analysis methods in application to
 - Complex substance and material systems
 - Development of chemical and process engineering processes
 - Chemical process analysis

... in battery recycling

- Discharge, disassembly, separation of the battery cells and recovery of the “black mass”
- Chemical and technical strategies for recovering valuable elements
- Development of new and unusual strategies for recycling and recovery
- Functional recycling of battery materials for direct reuse in the production of new battery cells
- Degradation studies during the life cycle of batteries and during recycling processes
- Improving the quality of recovered anode and cathode materials
- Safety and safe handling of batteries and battery materials
- Education and training



RESEARCH TOPICS

Analytical questions

- Precision analysis of major, minor and trace elements
- Spectroscopy of diatomic molecules
- Analysis of silicon purity
- In-situ and ex-situ analysis of acidic etching baths

Recycling and resources

- Functional recycling of lithium-ion batteries
- Recycling of metal and ceramic composites
- Recovery of precious metals from catalytic converters
- Radical formation processes
- Purification of silicon residues

Silicon Chemistry

- Wet chemical etching of silicon
- Metal-assisted etching of silicon
- Chemical reactivity of strained silicon
- Silane chemistry
- Thermodynamic calculations



EQUIPMENT

- Optical emission spectrometers (simultaneous and sequential) with inductively coupled plasma (ICP-OES) and electrothermal vaporization (ETV) or glow discharge (GD-OES)
- High-Resolution Continuum Source Atomic absorption spectrometer (HR-CS-AAS)
- Zeemann graphite furnace AAS
- Ion chromatographic systems
- Quadrupole mass spectrometer
- Thermogravimetry (TGA) with DSC modes
- Electrical multi-channel battery test systems; e.g. impedance spectroscopy, cyclic voltammetry
- Scanning electron microscope with energy and wavelength dispersive X-ray spectroscopy (SEM-EDX/WDX)
- Raman and infrared microscopy, Raman spectrometer
- Confocal microscopy, white light and phase shift interferometry
- Diffuse Reflection Fourier Transform Infrared Spectroscopy (DRIFTS)
- Reflectance measurement
- Contact angle measuring device
- Coulometric titration according to Karl Fischer
- Automatic titrators
- Microwave digestion systems
- Fluorescence spectrometer