

Subproject C05 entitled 'PCET-active Anodes for Electrosynthesis' offers **one PhD position**:

#C05 Palakkal: PhD position (75% TVL-E 13) within the group of Prof. Dr. Palakkal ([Link to Homepage](#))

We will investigate thin film anodes based on transition metal (TM) oxides for electroconversions. The tasks of the project include (i) the preparation of 3d TM doped ZnO anodes using a hybrid pulsed laser deposition technique, (ii) investigation of microstructure, electronic/band structure, and magnetic moment, and (iii) correlation between structural/electronic parameters and electrocatalytic performance.

The Ph.D. student will grow epitaxial thin films of TM-doped ZnO on various substrates using a hybrid molecular beam epitaxy-pulsed laser deposition (MBE-PLD) technique. The PhD student will be involved in the installation of the new Zn molecular beam source and daily activities of the PLD lab. Careful study of the crystal structure, topography, microstructure, electronic structure, band structure, and magnetic moment will be performed on these films using various characterizations like XRD, AFM, TEM/EELS, XPS, Spectroscopic ellipsometry, magneto-transport using a physical property measurements system, and SQUID magnetometry.

Active collaboration with the project partner at uni. Mainz for investigating the electro-organic transformations and with different projects at uni. Goettingen for advanced characterization will be involved.

Your profile

- Recently obtained Master's degree in physics, materials sciences, or closely related subject areas
- Communication skills in English are required. Good German language skills are desirable
- You are a team worker and self-motivated to attain project goals

Preferred experiences (experiments, data collection, and analysis)

- Thin film growth by pulsed laser deposition/molecular beam epitaxy
- Structural characterization of materials by XRD, XPS, etc.
- Optical/magnetic/magnetotransport/transport characterization techniques