

# UniSysCat Colloquium

Prof. Dr. Umit Ozkan

*The Ohio State University*

Start Time: Wednesday, March 13, 2019 05:15 pm

End Time: Wednesday, March 13, 2019 06:45 pm

Chemistry Building, C264

Technische Universität Berlin, Straße des 17. Juni 115, 10623 Berlin

## **Carbon-based Catalysts as Oxygen Reduction Reaction (ORR) and Oxygen Evolution Reaction (OER) in Acidic Media**

Prof. Dr. Umit S. Ozkan

*The Ohio State University*

*Department of Chemical and Biomolecular Engineering*

Large scale commercialization of Proton Exchange Membrane Fuel Cells (PEMFCs) for power generation is hindered by their high cost, most of which is attributed to noble metal based cathode catalysts (platinum). Considerable research has been carried out to develop non-noble metal cathode catalysts for catalyzing the Oxygen Reduction Reaction (ORR). We have previously reported on the role of the transition metal and nitrogen in two classes of carbon-based materials, i.e., nitrogen-containing carbon nanostructures (CN<sub>x</sub>) and iron-nitrogen-carbon (Fe-N-C) catalysts. Our current research focuses on gaining further insights into these catalysts and establishing differences in their ORR and OER activity and stability. Detailed characterization of these materials has also been performed using techniques such X-ray photoelectron spectroscopy (XPS), Temperature Programmed Oxidation (TPO), X-ray Absorption Near Edge Spectroscopy (XANES), Extended-X-ray Absorption Spectroscopy (EXAFS), Superconducting Quantum Interference Device (SQUID) magnetometry, Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES) and Mössbauer Spectroscopy.

Prof. Dr. Joachim Sauer

Organizer



FHI



UNIVERSITÄTSMEDIZIN BERLIN

