

**ICB PhD public presentations****DEVELOPING ELECTRON  
DIFFRACTION INTO A MULTI-  
PURPOSE TOOL FOR CATALYSIS****Julian Wennmacher**

The van Bokhoven Group

Supervisor: Prof. Dr. Jeroen A. van Bokhoven

Co-examiners: Dr. Tim Gruene (University of Vienna),

Prof. Dr. Takashi Ishikawa and Dr. Michael Wörle



**01/12/2020, 2 pm, on Zoom**

**Zoom Meeting ID: 322 583 2258**

**Project Summary:** Catalysis is driven by micro- and nanocrystalline compounds like aluminosilicates, which have a paramount role in the processing of hydrocarbons and valorization of small molecules.

Electrons are a suitable radiation to probe latter materials, since it can be focused on small areas, has a strong elastic interaction with matter and while diffracted by the electrostatic potential of a crystal, might carry delicate chemical information. We developed a concept for an electron diffractometer to yield accurate and complete electron diffraction (ED) structures of zeolites. By utilising novel detector technology and careful data sampling protocols, we demonstrate that quality of our ED data suffices to locate aluminium sites in the framework of zeolite catalysts and might indicate charge accumulations associated. Finally, we exploit ED to observe chemical reactions in zeolite catalysts ex- and in-situ.

**CV:** Julian received his B. sc. in Chemistry from University of Freiburg (DE). He proceeded his Master studies at the Technical University Munich, which he concluded with a Master Thesis at Edinburgh University. In April 2017 he started his PhD studies in the van Bokhoven group, under co-supervision of Tim Gruene, to aid catalysis with electron diffraction techniques.