

Session of Focus Materialchemie – Wednesday, **25.01.2022** 16:00 – @ Seminarraum Lehar 02 (TU-Wien, Getreidemarkt 9, BC, OG. 02, room A46) – [join us](#) on ZOOM (ID: 983 0066 2349)

## **Electrochemical CO<sub>2</sub> Reduction on Perovskite Catalysts**

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Doped perovskites with certain compositions, like transition metals on the B-site, are catalytically highly active materials for heterogeneous catalysis. In addition to that, some perovskites are Mixed Ionic and Electronic Conductors (MIECs) and can, therefore, be used as electrodes for electrochemical catalysis. Applications can be found for example in Solid Oxide Electrolysis Cells (SOECs) and Solid Oxide Fuel Cells (SOFCs) for carbon neutral energy storage and conversion.

The aim of this thesis is the investigation of the electrocatalytic activity with respect to CO<sub>2</sub> reduction of thin film electrodes composed of calcium doped perovskites, namely La<sub>0.6</sub>Ca<sub>0.4</sub>FeO<sub>3-δ</sub>, Nd<sub>0.6</sub>Ca<sub>0.4</sub>FeO<sub>3-δ</sub>, and Pr<sub>0.6</sub>Ca<sub>0.4</sub>FeO<sub>3-δ</sub>, which are fabricated using Pulsed Laser Deposition (PLD). The dependencies of the electrocatalytic activity on temperature, overpotential, Fe exsolution, and A-site composition are studied using Near Ambient Pressure X-ray Photoelectron Spectroscopy (NAP-XPS), impedance spectroscopy, and Direct Current (DC) measurements.