



## Advertisement of a PhD vacancy

at the department “Catalytic In situ Studies” at the Leibniz Institute for Catalysis at the University of Rostock

**403-02/2018**

The Leibniz Institute for Catalysis at the University of Rostock (LIKAT) is one of the leading European publicly-funded institutes focusing on the research and development of homogeneous and heterogeneous catalysts, as well as of catalytic processes and technologies. LIKAT conducts projects of application-oriented basic research and applied research and cooperates with industrial companies and research institutes worldwide.

The offered vacancy is in the frame of the DFG Priority Program SPP 2080 "Catalysts and reactors under dynamic conditions for energy storage and conversion". Our project part will deal with the development of Fe-based catalysts for CO<sub>2</sub> hydrogenation into higher hydrocarbons with suppressed selectivity to methane under dynamic operation conditions. Especially, we aim at (i) establishing the rules regulating catalyst structure/composition under dynamic and steady-state CO<sub>2</sub> hydrogenation conditions and (ii) identifying structure-activity relationships by spectroscopic on-line monitoring. Our approach includes the precise synthesis of supported and bulk Fe-based materials doped with other metal oxides, their detailed characterization, mechanistic and kinetic tests under dynamic and steady-state conditions, as well as operando spectroscopic studies of the dynamics of catalyst structure changes in CO<sub>2</sub> hydrogenation. The following experimental in situ and operando methods will be applied: i) Infrared spectroscopy (FTIR and DRIFTS), ii) Raman spectroscopy, iii) XRD, and iv) EPR spectroscopy. The works include the development and/or adaption of the respective operando methods enabling operation under evaluated pressure and changing gas atmospheres and operando studies of the catalysts under near industrial relevant conditions and controlled cyclic operation.

We are looking for motivated researches having a diploma degree or a master's degree in chemistry or chemical engineering with a strong background in synthetic inorganic chemistry, physical chemistry and/or heterogeneous catalysis. The candidate should be committed to research and have proficiency in written and spoken English. It would also be appreciable if the applicant were familiar with in particular optical spectroscopies and mass spectrometric analysis and had good computer skills (MS Office, Origin). Women are encouraged to apply.

We offer a challenging PhD position in an international research group in an excellent environment at the LIKAT Rostock. The position with a working time of 26 hour per week is available from now on and is limited to 3 years. The salary is based on public service rates of the German states (EG13 TV-L, 65%).

Highly motivated applicants are kindly asked to submit their application letter together with a detailed CV and a copy of the masters/diploma certificate with reference “Dehydrogenation” as an e-mail (in one pdf file) stating the reference number **403-02/2018** to [ursula.bentrup@catalysis.de](mailto:ursula.bentrup@catalysis.de).

The application deadline is the **31<sup>st</sup> of October 2018**. LIKAT support professional equality of women and men and so applications from women are most welcome. Because in this sector of LIKAT women are underrepresented preference will be given to women with equal qualification. Severely disabled applicants with equal qualification and aptitude will be given preferential consideration.