

Enzymes@ZIFs: Continuous flow synthesis and characterization of new bio-composites for Biocatalysis

The PhD funded by the CERIC-ERIC is embedded into a collaborative project between Prof Paolo Falcaro & Prof. Heinz Amenitsch, TU-Graz

We are looking for a PhD student interested in a combination of microfluidic continuous flow synthesis of metal-organic frameworks and cutting-edge characterization methods.

Metal-organic frameworks (MOFs) and, in particular, MOF-based biocomposites have demonstrated unprecedented properties suitable for applications in protection and delivery of biopharmaceuticals, biosensing, biocatalysis, and cell and virus manipulations.

The goal of this project is: 1) to create a versatile platform for the development of bio-composites based on the encapsulation of biomacromolecules into ZIF-based materials.; 2) to achieve a precise control of their physicochemical and functional properties.

Besides the instruments available at the TUG, the characterization techniques will include situ small angle X-ray scattering at Elettra-Sincrotrone, Trieste, NMR spectroscopy at National Institute of Chemistry, Ljubljana and Attenuated Total Reflection Fourier Transform Infrared Spectroscopy (ATR-FTIR), performed at the Chemical and Life Sciences branch of the SISSI beamline at Elettra-Sincrotrone Trieste.

Required qualifications: Master- or Diploma degree in Physics, Chemistry or Material Science

Additional criteria:

- background in chemical synthesis
- experience in X-ray techniques
- experience in scientific computing
- willingness to work in an international environment in Italy and Austria.

The PHD is associated with a temporary position for three years at the Institute of Inorganic Chemistry, Graz University of Technology. The yearly salary is 33.414, 83 € (pre-tax) according to the rules of the FWF (based on an employment of 32 working hours per week working on the project).

Desired starting date: 1. March 2022 (The position will be open until an appropriate candidate is found).

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