CHARLES UNIVERSITY
Faculty of Science

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PhD student project in crystalline nanoporous materials

"Multifunctional zeolite materials for processing of platform chemicals and their derivatives"

Requirements:

•M.Sc. or equivalent in Chemistry (Beneficial: strong background in Material Science)

•Ability to communicate within an international team

•Enthusiasm for research in zeolite chemistry

We offer:

•A 4-years Ph.D. student position starting from March 2023

•Funding from the Ministry of Education, Youth and Sports' ERC_Cz grant

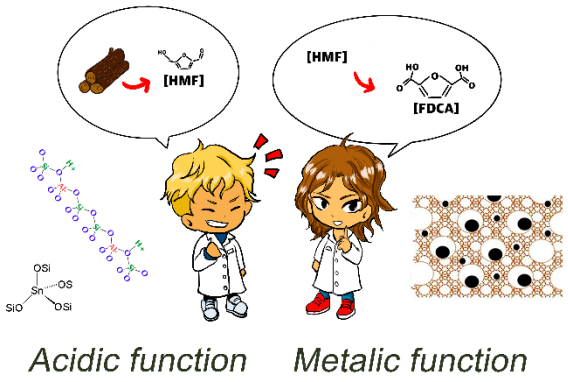
•Opportunity to gain expertise in multiple synthetic and analytical techniques (X-ray diffraction, physisorption, FTIR and NMR spectroscopies, electron microscopy, among others)

•Work in an international group of scientists across multiple disciplines

•Collaborations with international partners

•Participation at international conferences and workshops

Project summary



Advances in catalysis have fueled the development of modern society, particularly thanks to zeolites, solid acid catalysts with versatile chemical composition and uniform micropores. Similarly to the vital role of the brain in a human body, the acid sites (framework metal atoms) determine the catalytic activity and selectivity of zeolite catalysts. Fine-tuning these acid sites at a "nanoscale" level (e.g., their nature/strength/concentration) has enabled us to enhance the properties of zeolites to some extent. However, currently available synthetic tools are still unable to control the acid-site structure in heterogeneous catalyst at an atomic level, which is crucial for designing atom-efficient catalytic processes. This is where the Engineering Solid Catalysts Group comes in: we develop various synthetic techniques allowing fabrication of materials with desired nature and concentration of active sites (*Chem. Soc. Rev.*, 48 (2019) 1095). By applying advance characterization techniques, we characterize the designed materials and test them in relevant reactions with the aim to establish synthesis-structure-function relationships for engineering highly efficient catalyst for particular catalytic process. This is what we would like to explore further together with you, the successful applicant.

For questions, please, do not hesitate to contact Dr. Mariya Shamzhy, tel: +420221951291,

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