3 PhD positions available within H2020-MSCA-ITN-EID project CHASS: Cu-CHA zeolite-based catalysts for the selective catalytic reduction of NOx in exhaust diesel gas: addressing the issue of Sulfur Stability.

Do you want to conduct applied research in heterogeneous catalysis within a network bringing together leading European groups in the field of automotive catalysts? The team includes complementary expertise in catalysts characterization and testing, computational catalysis and modelling of catalysts behaviour.

Information about the project

The project CHASS is an industrial doctoral training programme, supported by the EU Marie Skłodowska-Curie ITN-EID action, which aims to educate four PhD students. The project targets deactivation of SCR catalysts for NOx removal from diesel exhaust gases, with special focus on poisoning by SO₂ and exposures to high temperatures. The aim is to build models based on a fundamental chemical understanding of the catalysts, which can be applied in the development of future exhaust systems.

The work will take place in a network consisting of two academic groups at the University of Torino (Italy) and Chalmers University of Technology in Gothenburg (Sweden) and two industrial groups at Umicore AG & Co KG in Hanau (Germany) and Umicore Denmark ApS in Hørsholm. These groups are leading in the field of automotive catalysis and cover expertise from fundamental atomistic understanding to technological application, including quantum-chemistry, thermodynamics, spectroscopy, kinetic measurements and modelling. The successful candidates will be enrolled in the PhD programs at the participating universities and spend at least 18 months in one of the Umicore locations. This provides opportunities to gain training and experience in interdisciplinary teams in both academic and industrial environments, and a training as creative, entrepreneurial, and innovative researchers, while contributing to the development of sustainable technologies. The programme also foresees personal development plans including workshops within the network, courses, and training in personal skills like communication and teamwork. As CHASS is committed to a well-balanced gender ratio, this job posting addresses qualified male and female persons equally.

Deadline for application: 06/06/2021 23:00 - Europe/Brussels
Info: itnchass@unito.it
Open positions:

PhD student position in Atomistic modeling of NOx reduction

The successful candidate for this specific position will be employed at the division of Chemical Physics at Chalmers for a total period of 4 years, including an 18 month stay at Umicore in Hanau. The theoretical activities at Chemical Physics focus on electronic structure calculations within the density functional theory together with mean-field modeling and Monte-Carlo simulations for reaction kinetics. By linking quantum mechanical calculations with kinetic modeling it is possible to bridge both length and time scales. Theoretical spectroscopy is used together with experimental observations to scrutinize fundamental reaction mechanisms and processes.

For more information: https://euraxess.ec.europa.eu/jobs/633858

2) PhD student position in Hydrothermal Deactivation of Cu-Zeolite Catalysts for NOx reduction

The successful candidate for this specific position will be employed at Umicore Denmark ApS in the Automotive Catalysis Research and Technology department for a total period of 4 years, including an 18 month stay in the group of Prof. H. Grönbeck at the Physics department at Chalmers University of Technology in Gothenburg, Sweden. The experimental work at Umicore will consist of measurement of the deactivation behaviour of Cu-zeolites for NH3-SCR. In order to get further insight in the material properties on the atomic scale, that control the experimentally observed deactivation, quantum-chemical calculations will be performed during the stay at Chalmers University.

For more information: https://euraxess.ec.europa.eu/jobs/635784

3) PhD student position in characterization and testing of SO2 poisoning effect on Cu-CHA zeolites

The successful candidate for this specific position will be employed at University of Torino in the Chemistry department for a total period of 3 years, including an 18 month stay in the Automotive Catalysis Research and Technology department of Umicore Denmark ApS. The experimental work at University of Torino will consist of in situ/operando spectroscopic measurements of Cu-CHA catalysts poisoned by SO2. Catalytic tests will be carried out at Umicore, in order to correlate the structure of the formed [Cu,S,O,H] motifs with the catalysts deactivation and performance.

For more information: https://euraxess.ec.europa.eu/jobs/634597