

Optimization of perovskite washcoating on monoliths for TWC application

Research Field: Environmental heterogeneous catalysis, Automotive

Workplace: UCCS (MatCat/ReMCat Team) – Cité Scientifique Villeneuve d'Ascq (59)

Industrial Collaboration: Aramco Overseas

Type of Contract: 6 months' internship (M2)

Expected Starting Date: March 2022

Remuneration: ~ 600 € per month

Context

In order to reduce the environmental impact of the transport sector, Aramco is working on innovative solutions for after-treatment systems. Ever tightening emission standards lead to the development of a specific system to treat residual gas and reach the ambitious objective of an ultra-low emission vehicle.

The project focuses on evaluating advantages and weaknesses of pollutant abatement systems to intensify exhaust gas cleaning processes. It will be carried out within the MatCat and REMCat teams whose activities are focused on material synthesis for heterogeneous catalysis application.

Missions

The objective of this work will be to optimize the synthesis of a monolith-supported perovskite catalyst. After a literature search, candidate will varyate different synthesis parameters (support treatments, solution of precursors, pH, viscosity, thermal treatments, etc...) to achieve stable material. The best catalysts will be characterized by various techniques (N_2 physisorption, ICP-OES, XRF, XRD, SEM, ...) and their performances will be evaluated on CO oxidation reaction.

Candidate profile

Student with a strong interest in material synthesis for catalytic application in air depollution. Knowledge of solution chemistry and solid characterization techniques will be appreciated. A person who is able to quickly acquire technical knowledge and to reflect on the results obtained. Dynamic, organized student with excellent interpersonal skills. Ability to write and communicate in English is essential.

Contact details: To apply, please send your CV, a cover letter and your Master's grades before January 31st, 2022 by e-mail to : MéliSSandre RICHARD (UCCS - RemCat) melissandre.richard@centralelille.fr and Jean-Philippe DACQUIN (UCCS – MatCat) jean-philippe.dacquain@univ-lille.fr