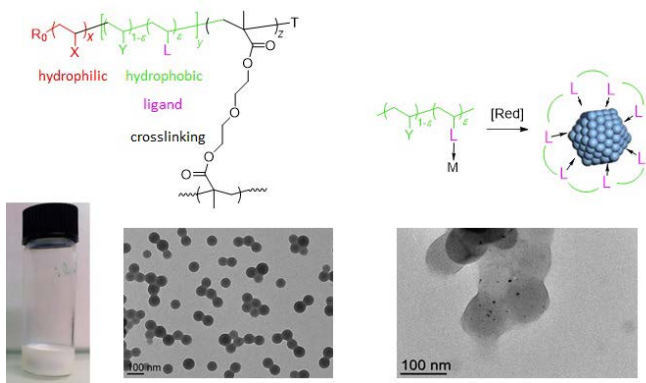


Marie-Curie Ph.D. position for a double diploma from the Danmark Tekniske Universitet (Denmark) and the Université Toulouse 3 Paul Sabatier (France)

Title: “Biphasic catalysis with metal nanoparticles inside polymeric nanoreactors”

Project description: The objective of the thesis project is to develop an innovative catalytic tool based on well-defined metal nanoparticles (NPs)¹ confined inside core-shell polymeric nanoreactors.² This approach is expected to combine the advantages of the aqueous biphasic protocol for easy catalyst recovery and recycling and the specific catalytic performance of metal nanoparticles, the activity and selectivity of which, as well as their stability and durability, may be enhanced by their confinement inside the protective nanoreactor core. Internal anchoring groups are expected to improve the selective introduction of organometallic precursors and to control the NP growth and localisation. This tool will be applied to several reactions and substrates, targeting added-value and biosourced substrates that are of interest to an industrial partner. The student will receive research training in organic chemistry (ligand-functionalized monomer synthesis), precision polymer synthesis, coordination chemistry and biphasic catalysis.



¹ (a) C. Amiens, D. Ciuculescu-Pradines, K. Philippot, *Coord. Chem. Rev.*, **2016**, *38*, 409-432. (b) T. Ayvali, K. Philippot, in *New Materials for Catalytic Applications*, E. Kemnitz and V. Parvulescu (Eds.), Elsevier, **2016**, Ch. 3, 41-79.

² (a) Zhang, X., Cardozo, A. F., Chen, S., Zhang, W., Julcour, C., Lansalot, M., Blanco, J.-F., Gayet, F., Delmas, H., Charleux, B., Manoury, E., D'Agosto, F., Poli, R., *Chem. Eur. J.*, **2014**, *20*, 15505-15517. (b) Lobry, E., Cardozo, A. F., Barthe, L., Blanco, J.-F., Delmas, H., Chen, S., Gayet, F., Zhang, W., Lansalot, M., D'Agosto, F., Poli, R., Manoury, E., Julcour, C., *J. Catal.*, **2016**, *342*, 164-172.

Period of the fellowship: 1 October 2020 to 30 September 2023 (36 months).

Funding: The Horizon 2020 Marie Skłodowska-Curie Action (MSCA) Initial Training Network (ITN) programme of the European Commission funds this fellowship through the “European Joint Doctorate” (EJD) Network entitled “**Coordination Chemistry Inspires Molecular Catalysis**” (CCIMC), which offers a competitive Ph.D. salary.

Recruiting institution and training plan: The Ph.D. student will be hired by and perceived a salary from the Danish Technical University (DTU) throughout the thesis but will spend ca. half of the time at the Laboratoire de Chimie de Coordination (LCC), a research institution of CNRS associated to the Université de Toulouse, according to a bilateral agreement for the double diploma. In addition, a short secondment period (4 months) will take place with an industrial partner (IFPEN, France) to work on the industrial applications of the developed catalysts. As part of the CCIMC ITN, the student will be exposed to a number of stimulating and rewarding network training events including tutorials, network workshops, international workshops and an international school.

Eligibility: The successful candidate must be in possession of a Master’s degree, or complete one by the beginning of the Ph.D. thesis, and satisfy the MSCA mobility rule (no more than 12 months of work and/or residence in the recruiting institution Country within the last 3 years).

Contacts: Prof Anders Riisager (ar@kemi.dtu.dk) at DTU; Dr Eric Manoury (eric.manoury@lcc-toulouse.fr) and Dr Karine Philippot (karine.philippot@lcc-toulouse.fr) at LCC-CNRS.

For more information and application procedures: www.ccimc.eu