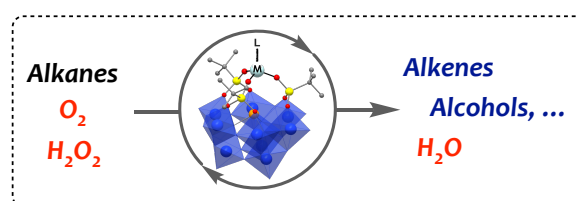


**PhD position available (2020-2023) in Inorganic Chemistry**  
@Sorbonne-Université, Paris

**C–H Activation for Alkane Conversion by Polyoxometalates**

**Context.** The PhD candidate will take part to a project that aims at converting alkanes into chemical building blocks of higher added value, a major challenge yet to be achieved in homogeneous catalysis. Dehydrogenation of alkanes into olefins represents one of the most desirable path to this end.<sup>[1]</sup> However, this reaction is reversible and highly endothermic and therefore strongly limited by thermodynamic equilibrium. To circumvent this energy issue we aim at developing an oxidative dehydrogenation,<sup>[2]</sup> an economically attractive alternative for the production of alkenes.

**Project.** Achievement of this objective requires the design of robust and well-defined catalysts. This project will take advantage of a molecular system built on multi-vacant Polyoxometalates (POMs), which i) proves to stabilize high- as well as low-valent metal ions in rigid bis- or tris-silanol environments,<sup>[3]</sup> and ii) may act as a redox-active ligand.<sup>[4]</sup> The successful PhD candidate will be in charge of i) the synthesis of metal complexes (from the group 4, 8 and 9) of POMs based multifunctional platforms, ii) the *in situ* formation of metal-oxo complexes using an oxygen atom donor, dioxygen preferably, and iii) the study of their ability for driving C–H activation by Hydrogen Atom Transfer (HAT), a preliminary stage to reach the objectives of the project. The PhD position is located in the team “Edifices Polymétalliques”, headed by Pr. Anna Proust, which benefits from the stimulating environment and the analytical and spectroscopic platforms provided by the Parisian Institute for Molecular Chemistry (<http://www.ipcm.fr>).



**Candidate profile.** The candidate should be highly motivated to work in the fields of inorganic, organometallic chemistry and catalysis. Experience in standard techniques for the synthesis and spectroscopic characterization of air-sensitive compounds (use of glove box and Schlenk techniques) will be appreciated. The ideal candidates should therefore hold a M. Sc. degree in the field of molecular inorganic and organometallic chemistry and homogeneous catalysis. He/she has to develop quickly his/her experimental skills to work independently and in an efficient manner, and must be autonomous to organize its own work program and to deliver results according to milestones. Additionally, the ideal candidate should also have a good adaptability, inclination to teamwork, and good communication skills to report the progress of his/her work efficiently and concisely using conventional office software (both in French and in English). Interested candidates must submit their application to the ED 406 Doctoral School (<http://ed406.sorbonne-universite.fr/fr/contrats-doctoraux.html>), deadline 31 of May, and promptly forward by e-mail a copy of the documents (CV, copy of the academic transcript (master degree), motivation letter and the contact info of two referees) to the PhD supervisor, Dr. G. Guillemot (see contact info).

**Contact. Dr. G. Guillemot:** Team Edifices POLyMétalliques (EPOM), Institut Parisien de Chimie Moléculaire, Sorbonne Université, Paris ; e-mail : [geoffroy.guillemot@sorbonne-universite.fr](mailto:geoffroy.guillemot@sorbonne-universite.fr); tel. +33 1 44 27 35 22.

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