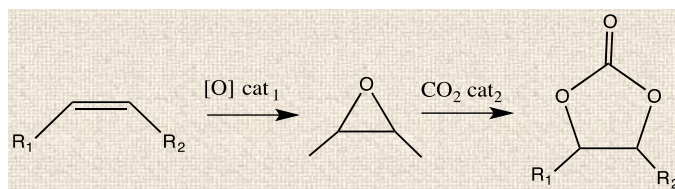


METAL CATALYSTS FOR ONE-POT COMPLEX REACTIONS USING CO₂ AND “GREEN” OXIDANTS

Richard Villanneau

Complex reactions can be described as reactions involving at least two consecutive steps without the isolation of intermediate species. The example presented here is the oxidative carboxylation of alkenes, which requires the combined use of an oxidizing agent and CO₂. The target molecule in this case is the cyclic carbonate derived from an alkene. Ideally, a single catalyst should be sufficient. However, these reactions are often complicated by the first epoxidation step, in which changes in the oxidation state of the metal center affect the second step of the process. In this presentation, we will demonstrate, using various salen-type and polyoxometalate metal complexes, that these reactions require the combination of different spectroscopic techniques with DFT calculations to achieve sufficient accuracy.



Dr Richard Villanneau, associate professor, E-POM team, Institut Parisien de Chimie Moléculaire, Sorbonne Université, Paris.