

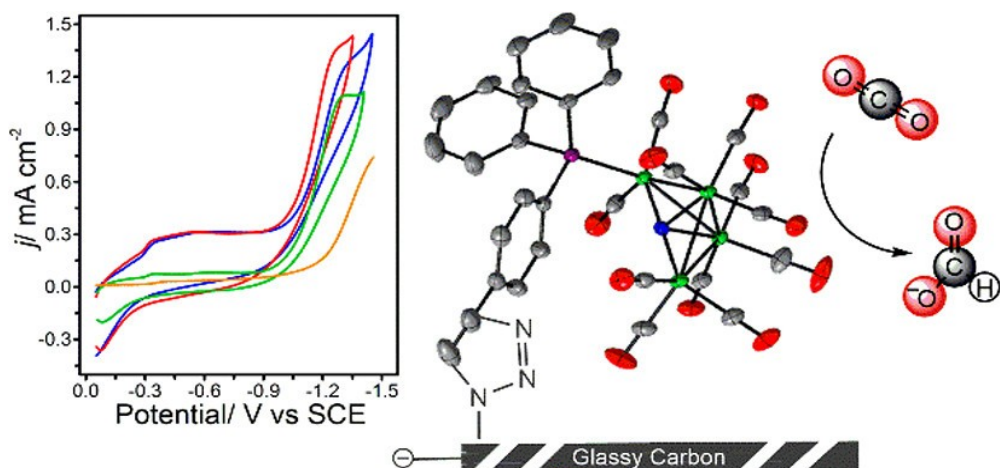
Announce de séminaire :
Institut Lavoisier de Versailles
Vendredi 26 Avril - 11h00
Salle de conférences de l'ILV

Managing Reactivity of Hydrides in CO₂ Reduction to Formate

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In this talk I will discuss the reduction of CO₂ into C-H bond containing fuels using [Fe₄N(CO)₁₂]⁻ and related small metal carbonyl clusters as electrocatalysts. At pH 6.5 or in MeCN/H₂O (95:5), [Fe₄N(CO)₁₂]⁻ promotes the selective formation of formate from CO₂ saturated solution at -1.2 V vs. SCE which is about 440 mV of overpotential. The intermediate hydride in this reaction is believed to be the iron-iron bridged hydride: [H-Fe₄N(CO)₁₂]⁻ which forms via an electron transfer, proton transfer (EC) process. We have considered both thermochemical and kinetic factors that control selectivity in the reaction of [H-Fe₄N(CO)₁₂]⁻ with substrates so that we can better understand why the Faradaic efficiency for formate is 97%, with very little H₂ produced. Results of mechanistic studies will be discussed, along with efforts in synthetic inorganic chemistry, to understand the role of the secondary coordination sphere in substrate transport.



Reduction of CO₂ to Formate by [Fe₄N(CO)₁₁(linker)]-Glassy Carbon