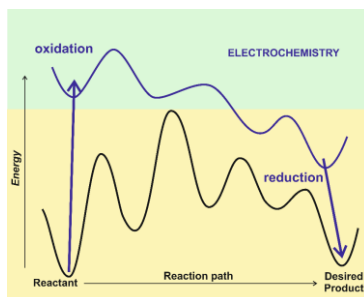
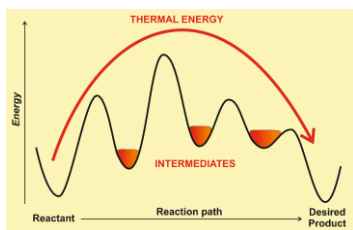


## Electrocatalysis

- **electrochemistry** - uses electron transfer to promote a reaction, reactions proceed in an electrochemical cell in the presence of an electrical potential
- **electrocatalysis** – works with catalysts that transfer electrons between the electrode and the reactants

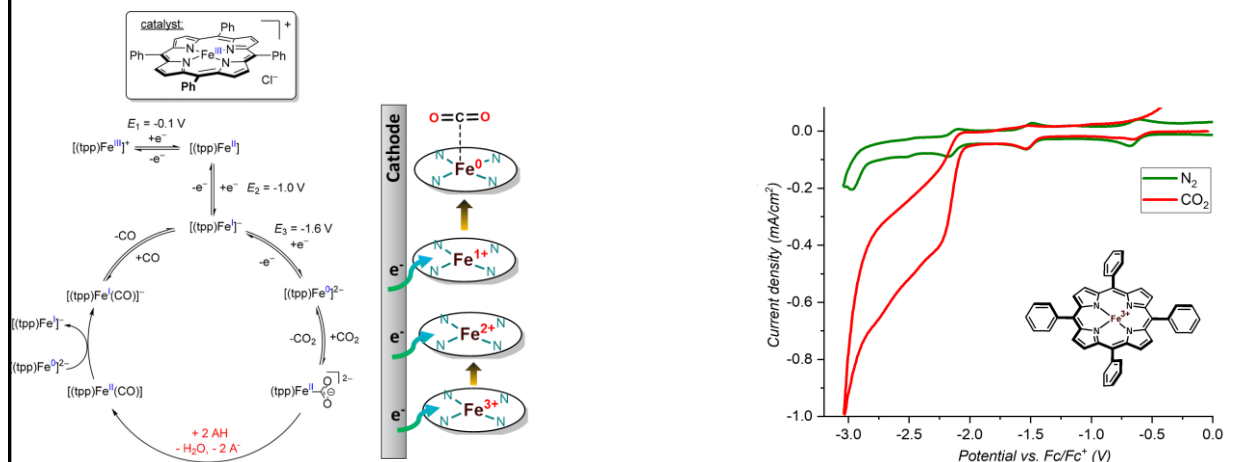


## Electrochemical reactions





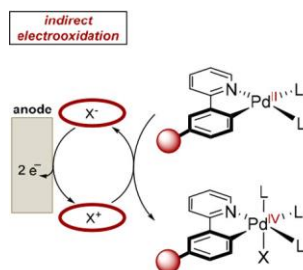
## Electrocatalytic CO<sub>2</sub> reduction using [Fe(tppe)]Cl



R. Francke, B. Schille, M. Roemelt, *Chem. Rev.* **2018**, *118*, 4631.

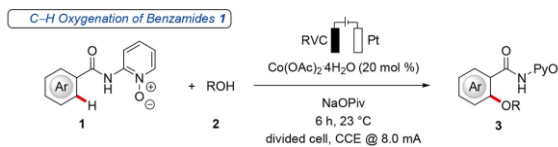
## Electrocatalysis in chemical synthesis

- oxidation of organometallic catalysts/intermediates
  - promoting reductive elimination
  - reoxidation after reductive elimination



L. Ackermann, *Acc. Chem. Res.* **2020**, *53*, 84.

## Electrocatalysis in chemical synthesis



L. Ackermann, *Acc. Chem. Res.* **2020**, *53*, 84.

## Learning objectives

- You should
  - understand and be able to explain principles of electrocatalysis.
  - know an example of an electrocatalytic reaction ( $\text{CO}_2$  reduction).
  - know an example of a use of electrocatalysis in synthesis.
  - know how to recognize a catalytic process using cyclic voltammetry.

Do the quiz and  
see you in the class!

