



MOFs for Photocatalytic CO₂ Reduction

Motivation and challenge

Global warming and the need for sustainable energy sources are major challenges to be met by mankind. Given that carbon based materials (fine chemicals and polymers) and fuels (hydrocarbons) are likely to be important even in a *post-fossil* era, the renewable feedstock will become increasingly important. In this context, capture and subsequent conversion of CO₂ would provide ideal CO₂-neutral alternatives for important chemical technologies.



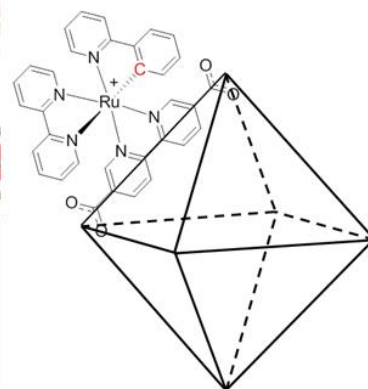
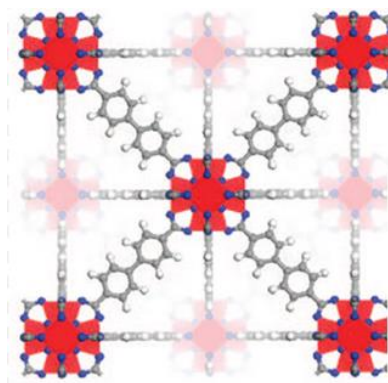
Objectives and scope

Metal-Organic Frameworks (MOFs) can combine the chemical properties needed for CO₂ conversion. This project is about photocatalytically active MOFs and spans over different areas. A master student will, depending on the interest, focus on one or several of these:

- *Functional linkers*, that connects the metal clusters These can be photoabsorbing and/or reductively active metal complexes.
- *MOF synthesis* via different strategies.
- *Catalytic testing* of the MOFs for photoreduction of CO₂ to chemicals like CO, HCOOH or CH₃OH.

Skills to be developed

- Metal-organic synthesis
- Materials characterization (NMR, UV-Vis, XRD)
- Catalytic testing using Gas Chromatography (GC-MS)



Contact information

Eirik Mydske Thoresen - e.m.thoresen@kjemi.uio.no - Office: Ø218 - Office Phone: 22844219