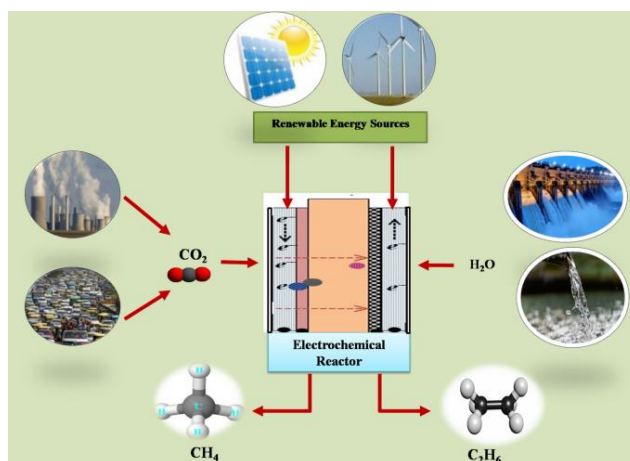


Possibility for HiWi, M.Sc. or B.Sc. thesis

My Ph.D. Topic: Electro-catalytic reduction of CO₂ to formic acid

Reducing the amount of CO₂ emissions to the atmosphere has been the focus of many studies in recent years, lame! Right!? What if instead of reducing the CO₂ emission and treating CO₂ as unwanted trouble, we would use the CO₂ to produce something useful like formic acid?! That is exactly what we will be doing!

I am working on electrochemical reduction of CO₂ to formic acid. We use novel gas diffusion electrodes coated with Bismuth oxide nano particles. These Gas dissuasion electrodes allow us to transform CO₂ into formic acid with help of electricity. If we use the green sources of electricity, we will not only be reducing the CO₂ emissions, but also actually consuming CO₂ to produce a much-needed raw material, Formic acid.



Position 1, HiWi or Bachelor thesis:

Optimization of CO₂ electroreduction to formic acid using different gas diffusion electrocatalysts and membranes.

In this position we will actively design different electro-catalysts. We will investigate different layering of catalysts and use different membranes in our reactor and analyze the effects of different component on the overall process efficiency. This position consists of experimental steps and data analysis.

Position 2, Bachelor or Master thesis:

Do you have a bit of back ground in numerical simulation and are you familiar with python?

Then this position is for you! Here we will prepare a numerical model which can describe the kinetic of the chemical and electrochemical reaction happening inside our reactor. Combination of experimental work (15%) and coding (85%) will make for a very good thesis if you are up for the challenge.