

Development of Catalyst-Containing Metal-Organic Frameworks

PROJECT DESCRIPTION

"Metal-organic frameworks (MOFs) are a relatively new class of materials that have shown great potential in the field of heterogeneous catalysis due to their porous nature and relatively high stability. The overall goal of this research project is to design and synthesize catalysts/ligand systems that can be immobilized via incorporation into MOFs. These MOFs will then be utilized in the continuous-flow production of industrially relevant materials in order to improve the sustainability of current industrial chemical syntheses. To meet this goal, there are a number of specific objectives that must be met.

Objective 1:

- Ligand/catalytic systems that are suitable for incorporation into MOFs must be identified. This can be done by surveying the literature. Once chosen, synthetic modification of the ligand/catalytic systems will facilitate the formation of the catalyst-containing MOFs.

Objective 2:

- The catalyst-containing MOFs must be screened for a variety of industrially relevant organic transformations. This can be achieved by testing different substrates against the catalysts in a continuous-flow reactor.

Objective 3

- Catalytic activity and selectivity must be optimized. This can be achieved by varying the continuous-flow reaction parameters (e.g. temperature, pressure, flow-rate, etc.). Such a study may also provide mechanistic insights that would be useful for future catalyst design.

Objective 4

- Factors affecting the lifetime of the catalyst-containing MOFs must also be identified. This can be achieved by characterizing the catalysts before and after reaction."

FACULTY-DEPARTMENT

Chemistry, Chemical Synthesis

DESIRED FIELD OF (STUDENT) STUDY

Augustana- Science

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INTERNSHIP LOCATION

Augustana Campus-Camrose

NUMBER OF INTERNSHIP POSITIONS

2

INTERNSHIP START DATE

July 4, 2018

INTERNSHIP END DATE

October 4, 2018

ARE THE DATES FLEXIBLE?

No, I am not able to accommodate an internship outside of the date indicated.