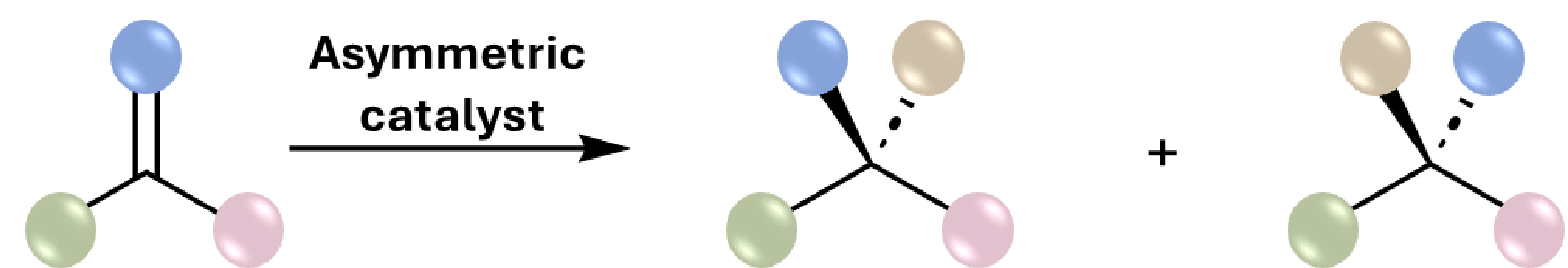


Conventional asymmetric catalyst

In conventional asymmetric catalysis selectively produce one enantiomer over the other in a chemical reaction.



Applications

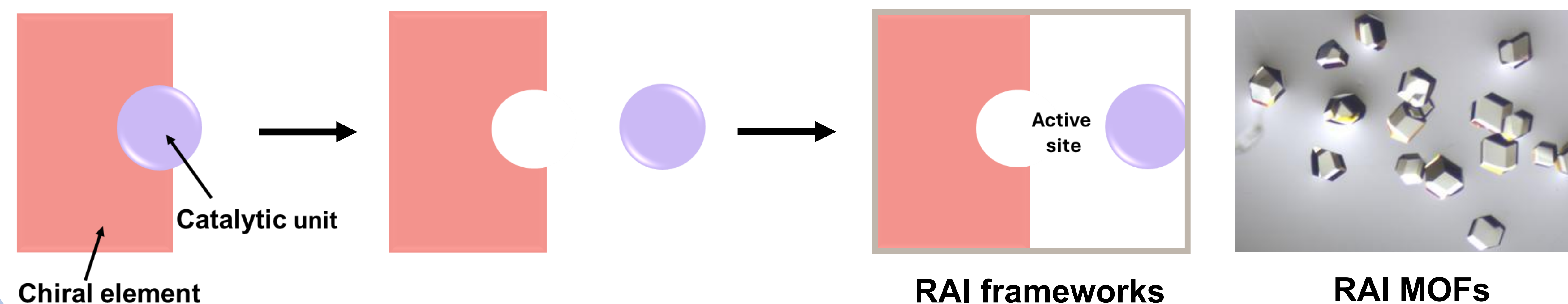
- Natural product synthesis
- Pharmaceuticals
- Material sciences

Limitations

- Reusability challenges
- Purification difficulties
- Economic concerns

Our Remote Asymmetric Induction (RAI) approach

In conventional asymmetric catalysis, the catalytic unit and the chiral element are typically linked together. In contrast, RAI approach separates these two components and employs a metal–organic framework (MOFs) as a platform to position them in close proximity, thereby creating an active environment for catalysis.

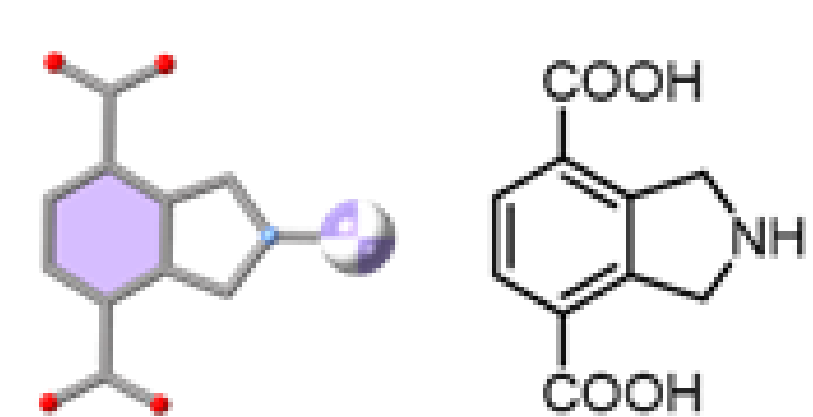


RAI frameworks

RAI MOFs

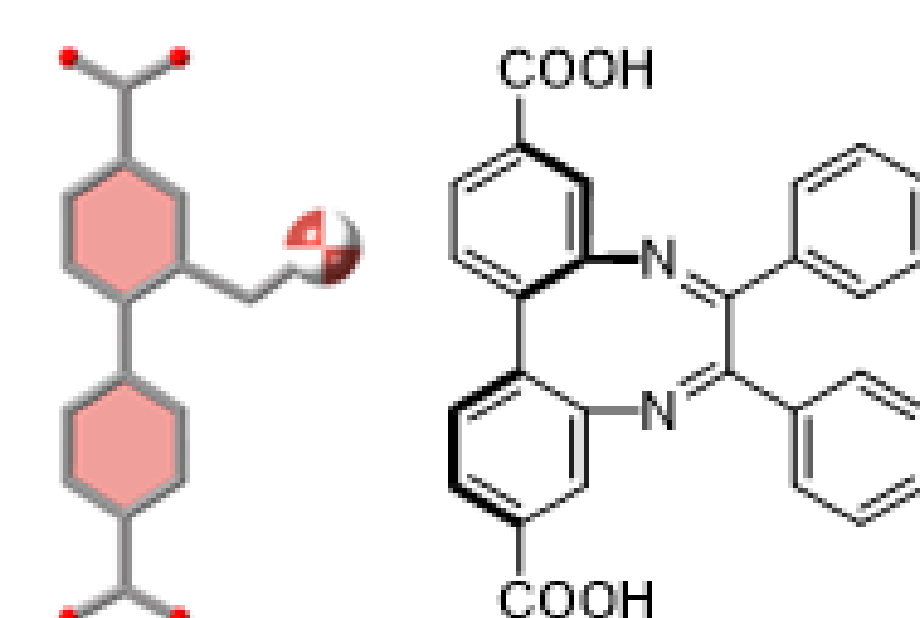
Implementing RAI strategy to our multicomponent Metal Organic Frameworks

Catalyst

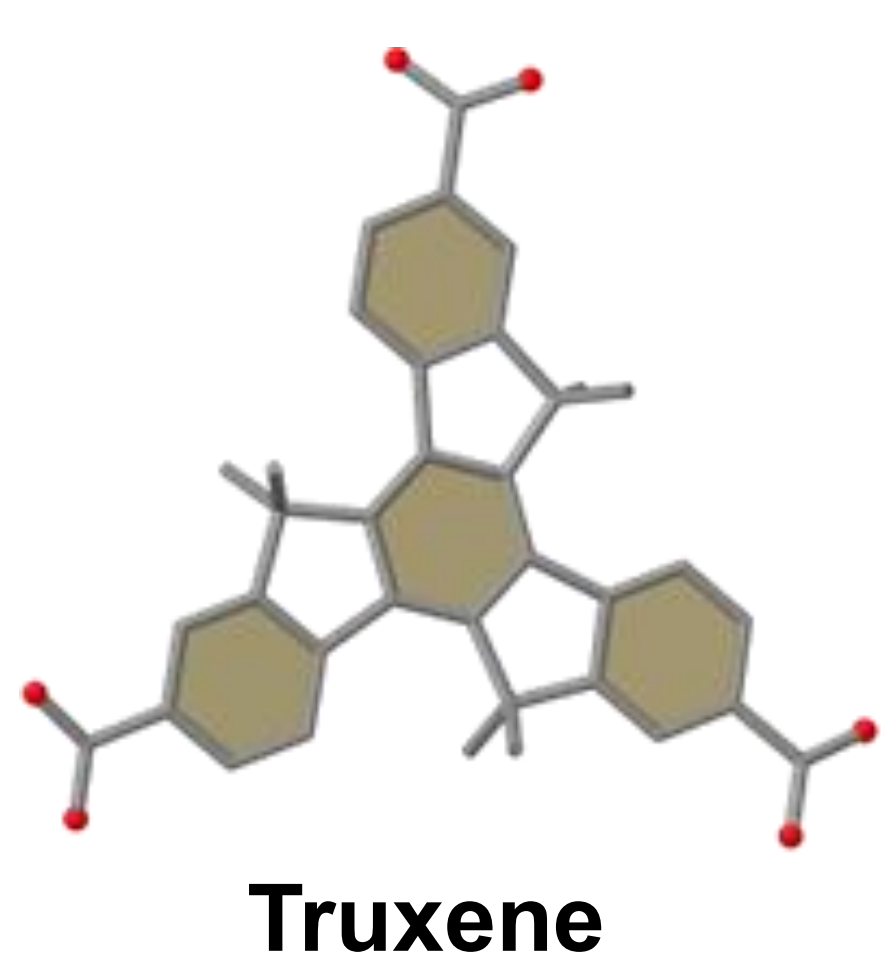


- Delivers catalytic information

Chiral modulator



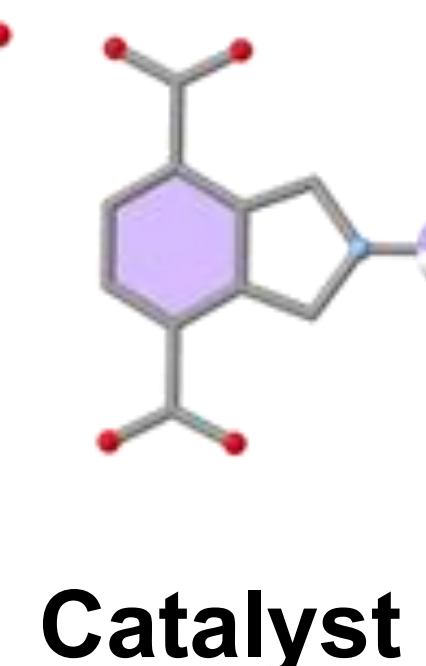
- Delivers chiral information



Truxene



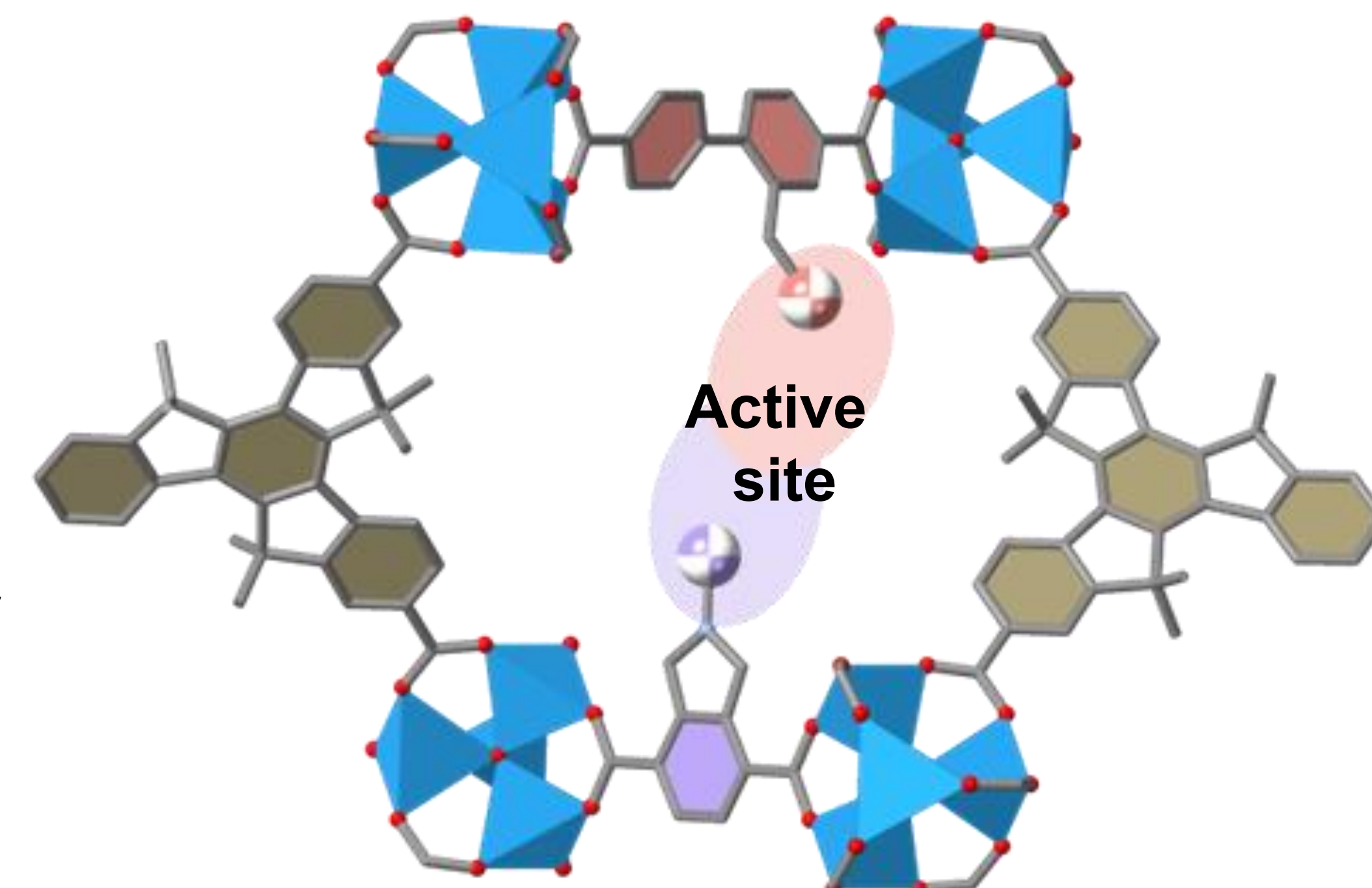
Chiral modulator



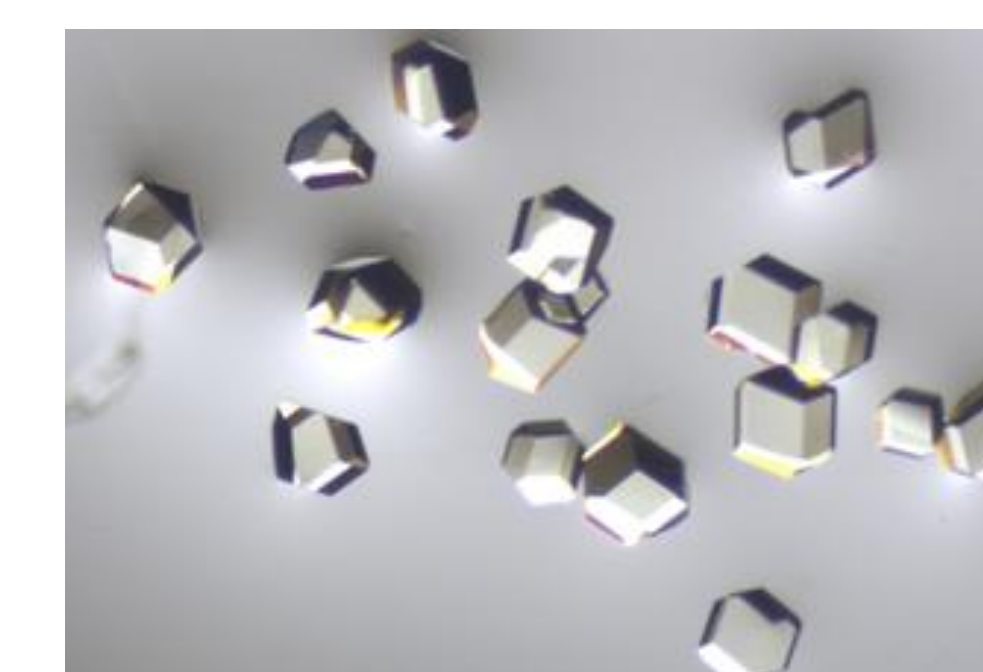
Catalyst



Zn cluster

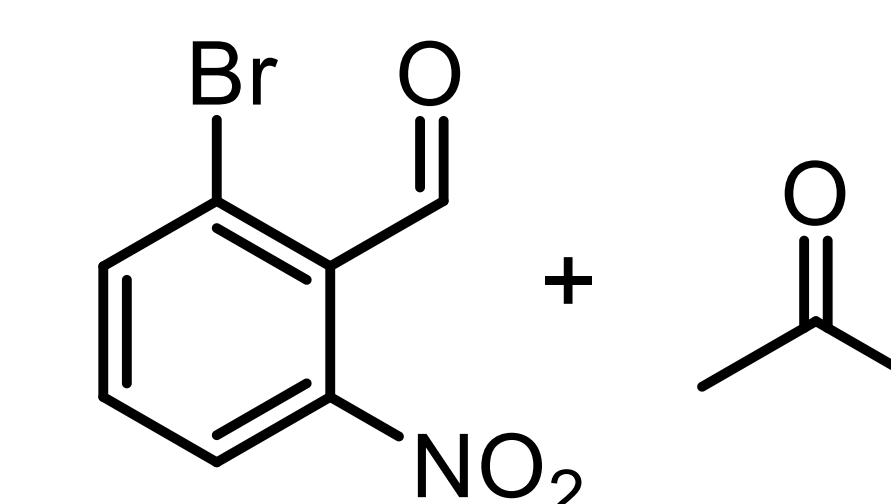


Multicomponent MOFs
MUF-77

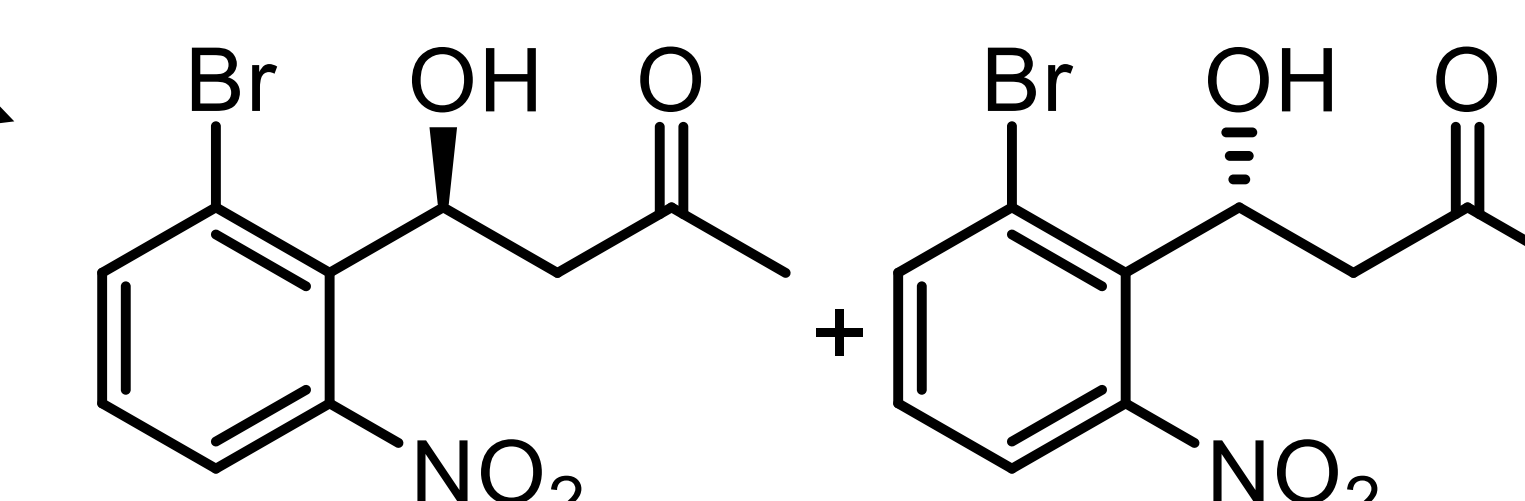


RAI MOF catalyst

Enantiomeric excess (ee) quantifies the imbalance between the two enantiomers in a chiral mixture.



Reagents for aldol reaction



Enantiomer 1

Enantiomer 2

Separation of enantiomers

Success, It works!
 46 % ee was achieved.
 Goal >90 %.

Chiral High Performance
 Liquid Chromatography (HPLC)

