

Current projects

Our research topics Focus on organometallic chemistry and homogeneous catalysis * and are motivated by synthesis and structure of new organometallic compounds as well as novel applications for homogeneous and, less frequently, heterogeneous catalysis. The following research topics are under investigation by a group of 30 PhD students and a number of post-graduate students who have joined us from other countries such as France, USA, China and Australia:

- Organometallic oxides , e.g. Methyltrioxorhenium CH_3ReO_3 (MTO), a catalyst in olefin and arene oxidation and in olefin metathesis and oxidation catalysis
- Heck-Type carbon-carbon coupling by palladium catalysts (CC-coupling reactions)
- Homogeneous two-phase catalysis , particularly reactions involving carbon monoxide (e. g. hydroformylation)
- Olefin polymerization by novel metallocene derivatives (in collaboration with polymer-oriented research groups)
- Ring opening metathesis polymerization (ROMP)
- N-Heterocyclic carbenes as directing ligands in homogeneous catalysis, e. g. Heck-coupling, olefin isomerization and olefin hydroformylation
- Organometallic material science , e.g. MOCVD for thin-film coating (metal formation, oxidic deposits such as lithium niobate from volatile precursor compounds and thin films of oxidic ceramics)
- Computational Chemistry (investigations of practical problems in the field of homogeneous catalysis by theoretical methods)
- Renewable Resources: Oleochemistry (e.g. olefin metathesis, and olefin oxidation)

Vacant research positions in these research areas can be found here .