Molecular Recognition and Catalysis

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The Molecular Recognition and Catalysis group is interested in all aspects of selective catalytic transformations and molecular recognition, and especially in the design, discovery, and study of systems that catalyze fundamentally useful organic reactions, in particular Lewis Acid catalysis and oxidations. In addition, we apply the tools of physical-organic chemistry to gain insight into the transition structure geometries and molecular recognition events that control reactivity and selectivity. The following topics are currently under investigation in our laboratories: - Activation of Small Molecules (CO2, O2, H2O2) - Mimics of Physiologically Important Metallo-Enzymes (haloperoxidases, ligninperoxidases); - New Approaches to Catalyst Design and Recycling in Green Chemistry; - Self-Assembled Molecular Cages and Catalysis in Confined Spaces; - Stereodynamic Chiral Probes for e.e. Determination.

- *Concentration-Independent Stereodynamic g-Probe for Chiroptical Enantiomeric Excess Determination*, J. Am. Chem. Soc., **2017**, 139, 15616–15619, DOI: 10.1021/jacs.7b09469.
- *Triggering Assembly and Disassembly of a Supramolecular Cage*, J. Am. Chem. Soc., **2017**, 139, 6456–6460 DOI: 10.1021/jacs.7b02341.
- *Vanadium(V) Catalysts with High Activity for the Coupling of Epoxides and CO2: Characterization of a Putative Catalytic Intermediate,* ACS Catalysis, **2017**, 7, 2367–2373, DOI: 10.1021/acscatal.7b00109.
- *Heterolytic (2 e) vs Homolytic (1 e) Oxidation Reactivity: N-H versus C-H Switch in the Oxidation of Lactams by Dioxirans*, Chem. Eur. J., **2017**, 23, 259-262. DOI: 10.1002/chem.201604507.
- *Effective bromo and chloro peroxidation catalysed by tungsten(VI) amino triphenolate complexes,* Dalton Trans., **2016**, 45, 14603-14608. DOI**:** 10.1039/C6DT01780K.