

Lecture: Organocatalysis (WiSe 2024/25)

What to expect? Goals, Structure of Lecture, Literature

- 1) Historic Overview
- 2) Nucleophilic Catalysis: DMAP, Amidines, Phosphines, etc.

Add-on: Mayr Nucleophilicity Scale

- 3) N-Heterocyclic Carbene Catalysis
- 4) Enamine Chemistry
- 5) Iminium Chemistry
- 6) Carbonyl Catalysis

Add-on: Mechanistic/Kinetic Analyses of Organocatalytic Reactions

- 7) H-Bonding Catalysis: Urea, Thiourea, Squaramides, Alcohols, Phenols
- 8) Halogen Bonding Catalysis
- 9) Catalysis with Sulfur and Selenium
- 10) Lewis Acids Catalysis Phosphoric Acids & Derivatives
- 11) Lewis Base Catalysis (Cinchona Alkaloids)
- 12) Boronic Acid Catalysis
- 13) Organosuperbases
- 14) Chiral Templates & Phase Transfer Catalysis
- 15) Catalysts based on Biomolecules & Site-selective Catalysis
(Cyclodextrins, DNA, Peptides)
- 16) Organocatalysis + Artificial Intelligence