Organometallic catalysis: the mechanistic approach

Table of contents:

- 1. Introduction: A history of fortunate accidents in catalysis
- 2. Principles of Homogenous Catalysis I [representation of catalytic cycles, general terminology]
- 3. Principles of Homogenous Catalysis II [Microscopic reversibility, Hammond, Curtin-Hammett, modes of binding in the transition state, kinetic vs thermodynamic control]
- 4. Elementary steps in homogenous catalysis 1: Oxidative addition and "arrested" oxidative addition
- 5. Elementary steps in homogenous catalysis 2: Reductive elimination
- 6. Elementary steps in homogenous catalysis 3: Beta-hydride elimination
- 7. Elementary steps in homogenous catalysis 4: Transmetallation

[concept, types of mechanisms, composition of the transition states, reactivity trends, applications] -

- 8. Establishing the nature of the catalytic species [Catalyst activation and deactivation, Homogenous vs Heterogeneous catalysed reactions, Catalytically active contaminants]
- 9. Basics of physical organic chemistry tools for studying reaction mechanisms