Biocatalysis

Grand Challenge Science in Biocatalysis

- Heterogeneous systems: catalyst, surface

  catalytic conversion of biomass, cellulases
- Energy transduction

  light harvesting antenna systems
- Understanding the physicochemical basis for enzyme stability: protein scaffold, solvent

Key experiments

- In situ real-time analysis of biomass enzymatic digestion: the substrate-enzyme interface
- Kinetics and dynamics of photo responsive enzyme complexes
- Thermal activity and stability

Kosmotropes, chaotropes, solvent effects

Key Capabilities

- In situ in beam reactor cells (Microfluidics)
- Real time analysis (Hardware/Software)
- Pump probe (light/chemical driven)
- Modeling and simulation (at the exascale)
- Selective isotope labeling