Redox-Auxiliary Catalysis

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Status: Seeking R&D and/or licensing partner

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Advantages of Redox-Auxiliary Catalysis

- Conversion of light energy to chemical energy of norbornadiene to quadricyclane as proof of concept.
  - Demonstrated attachment of a redox auxiliary to the norbornadiene system
  - Able to achieve a quantum yield of 0.60 (i.e. 60% of absorbed photons gave conversion) for the conversion to quadricyclane.
  - Catalytic turnover numbers achieve ≥1000 TON with a rate acceleration of ≥ 10^5
- Also demonstrate the technology’s utility as photo-electro switches by controlling the conformation of azobenzenes
  - Prepare the redox appended azobenzene derivatives
  - Derivatives are then irradiated with light at low temperature (-78 °C)
  - Isomerization from Z to E is rapid and occurs in less than 1 minute

Figure 1. Schematic of redox-auxiliary catalyst attachment

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