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Enantioselective Counter-Anions in Photoredox Catalysis: The Asymmetric Cation Radical Diels–Alder Reaction
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Cation Radical Diels–Alder Reactions via Asymmetric Counteranion-Directed Catalysis

Category

Organo- and Biocatalysis

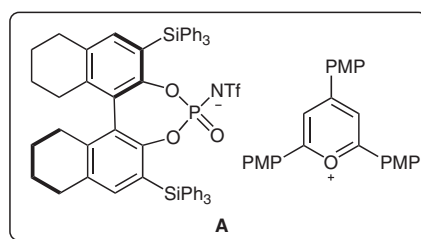
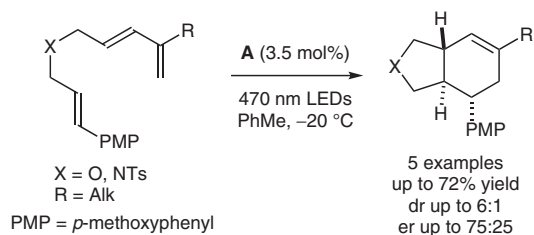
Key words

chiral counteranion

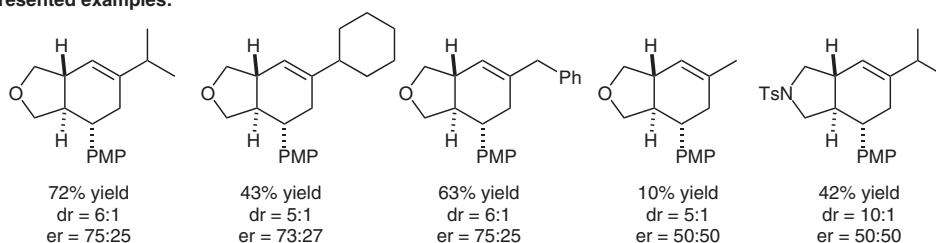
photoredox catalysis

Diels–Alder reaction

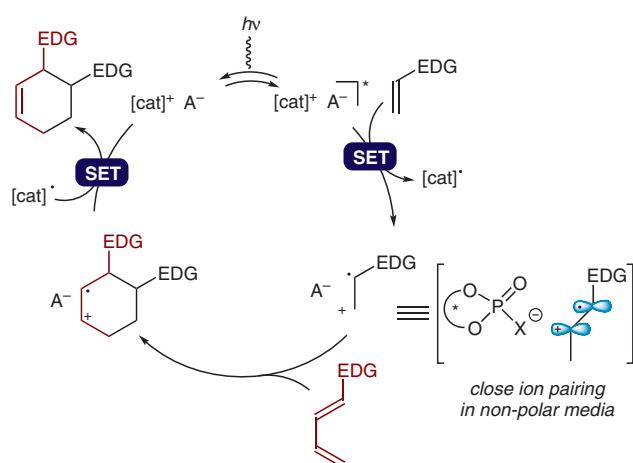
Synfact
of the month



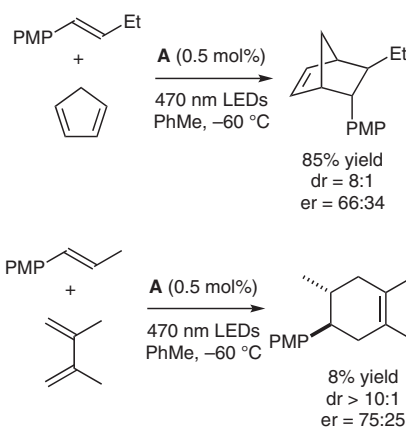
Presented examples:



Proposed mechanism:



Intermolecular examples:



Significance: The Nicewicz group reports both intra- and intermolecular enantioselective Diels–Alder reactions. The photoredox catalyst system consists of a cationic oxopyrylium photooxidant bearing a chiral *N*-triflyl phosphoramidate anion.

Comment: Enantioselective transformations that proceed through a radical ion pair represent a major challenge for asymmetric catalysis. In this report, despite obtaining moderate enantioselectivities, the authors proved the concept by introducing a chiral counteranion. The presented results could provide insights into asymmetric photoredox reactions.

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