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Category

Organo- and Biocatalysis

Key words

organochalcogen catalysis

desymmetrization

electrophilic chlorination

chloriranium ion

tetralins

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Chiral Sulfide Catalysis for Desymmetrizing Enantioselective Chlorination

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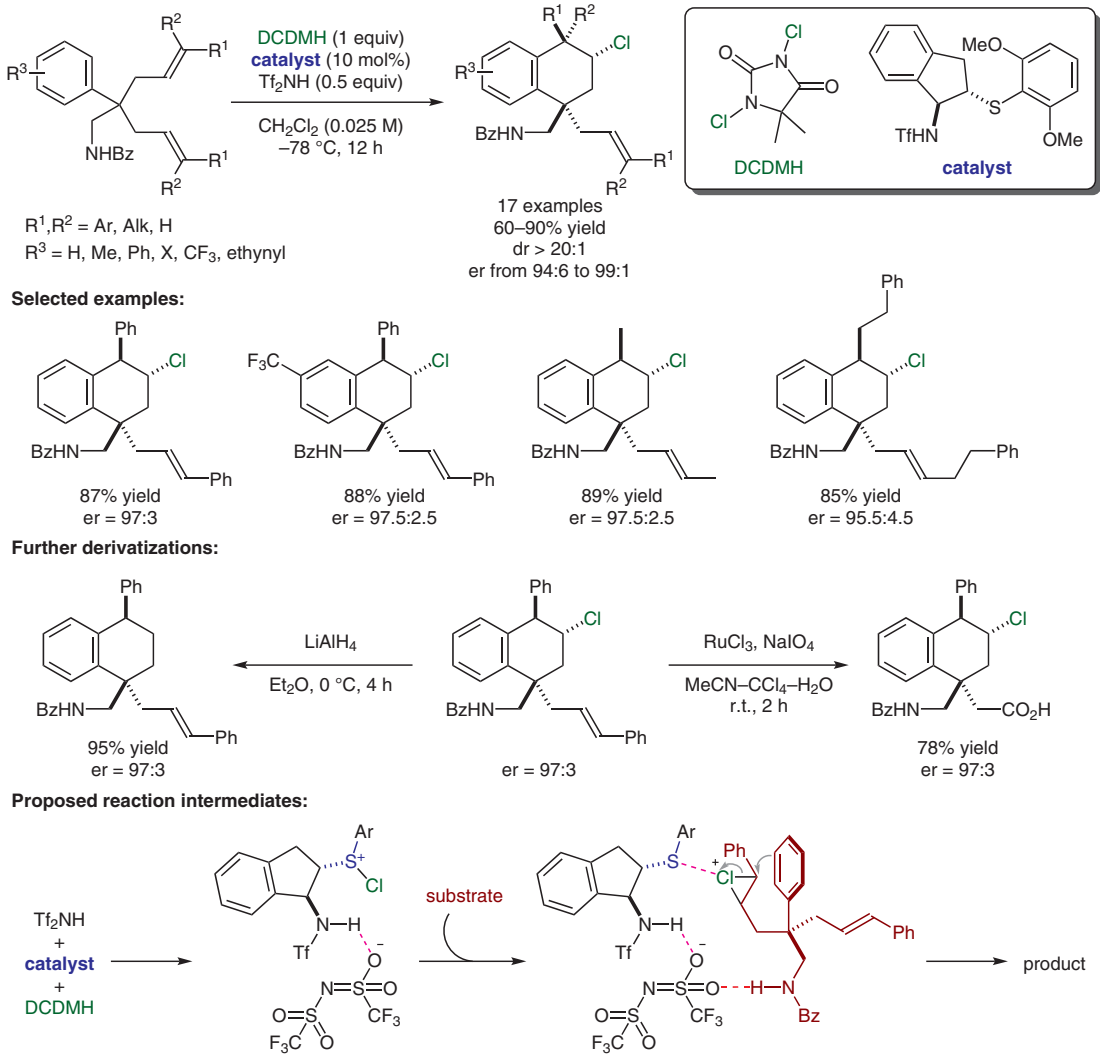
Chiral Sulfides as Catalysts for Asymmetric Electrophilic Olefin Chlorination



Significance: The group of Zhao reports the use of a chiral sulfide catalyst for the enantioselective desymmetrizing electrophilic chlorination of aryl-tethered olefins. The final tetralins, which contain at least two stereocenters (including a quaternary center), are obtained in good yields and with excellent diastereo- and enantioselectivities, even from electron-deficient aromatic rings as nucleophiles or alkyl olefins as substrates.

Comment: Because highly reactive chloriranium ions tend to form free carbocations, asymmetric alkene chlorination has remained a challenge in chemistry. By using Lewis basic organochalcogen catalysis as a way to approach this problem, the authors obtained excellent results, although the substrate scope presents some structural limitations, such as the requirement for hydrogen-bonding donor groups.

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