Organic Molecules and Polymers with Catalytic Function

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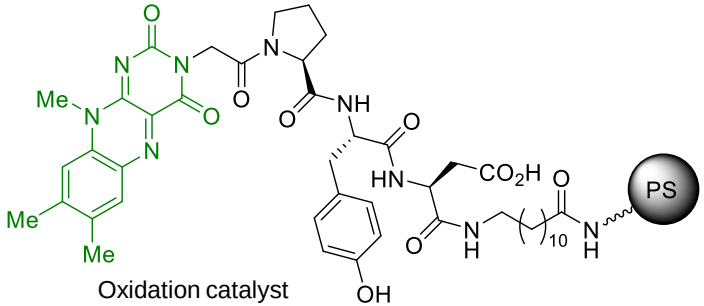
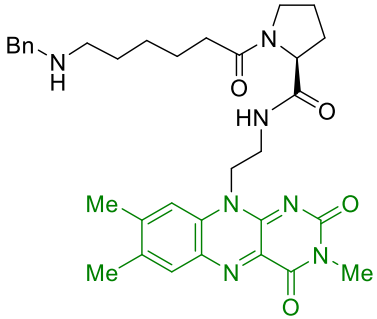
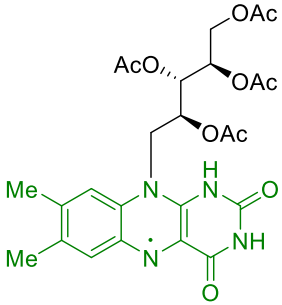


Oxidation catalyst
Chem. Sci. **2017**, *8*, 5468

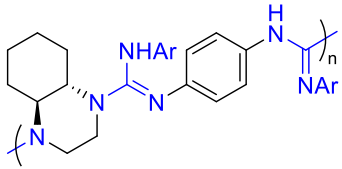


Photoredox catalyst
Org. Lett. **2019**, *21*, 6978

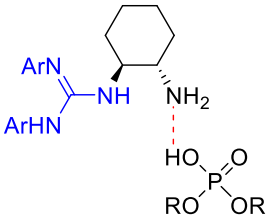


Brønsted acid catalyst
Chem. Commun. **2020**, *56*, 5661

Chiral Brønsted base catalysts



ACS Omega **2021**, *6*, 33215



Bull. Chem. Soc. Jpn. **2022**, *95*, 553

Content:

A central theme of our research is to design and provide new organic synthetic methods that contribute to the green and sustainable chemistry, which includes the development of organic molecules and polymers with catalytic function (especially for asymmetric synthesis), environmentally friendly and metal-free syntheses, visible-light-driven organic reactions, and molecular transformations utilizing a flow microreactor.

As for the catalyst development, we have recently reported a flavin-based oxidation catalyst (*Chem. Sci.*, **2017**, *8*, 5468), photoredox catalyst (*Org. Lett.*, **2019**, *21*, 6978), and Brønsted acid catalyst (*Chem. Commun.*, **2020**, *56*, 5661). In addition, we are also interested in developing guanidine-based asymmetric catalysts including chiral polymers bearing guanidines in the main chain (*ACS Omega*, **2021**, *6*, 33215) and chiral β-amino guanidines noncovalently modified with achiral phosphoric acid diesters (*Bull. Chem. Soc. Jpn*. **2022**, *95*, 553).

Keywords : organocatalyst, polymeric catalyst, photoredox catalyst, asymmetric catalyst

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