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Efficient Asymmetric α -Oxyamination of Aldehydes by Resin-Supported Peptide Catalyst in Aqueous Media
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Supported Peptide for Asymmetric α -Oxyamination of Aldehydes

Peptide catalyst 1:

Significance: A polystyrene-poly(ethylene glycol) resin supported peptide catalyst bearing terminal five-residue Pro-D-Pro-Aib-Trp-Trp combined with polyleucine was prepared. The polymeric peptide was successfully applied to the asymmetric α -oxyamination of aldehydes with TEMPO in the presence of a catalytic amount of FeCl_2 and NaNO_2 to give the corresponding products under aqueous aerobic conditions with up to 87% yield and 93% ee (5 examples).

Comment: The Kudo group has previously reported asymmetric hydrogenation (K. Akagawa et al. *Tetrahedron: Asymmetry* **2009**, 20, 461; K. Akagawa et al. *Org. Lett.* **2008**, 10, 2035) and asymmetric Friedel-Crafts alkylation (K. Akagawa et al. *Tetrahedron Lett.* **2009**, 50, 5602) in aqueous media with this catalyst. The polyleucine moiety between the tryptophan and the resin support not only provides a hydrophobic environment, but also effects the stereoselectivity of the reaction.

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