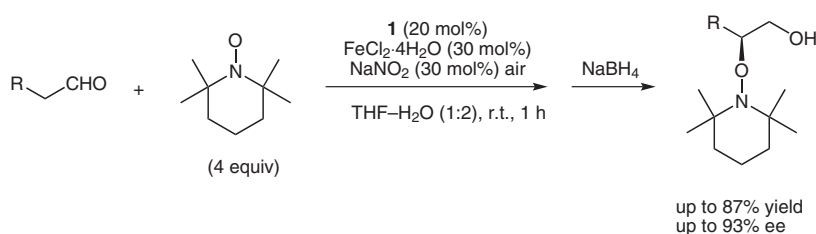


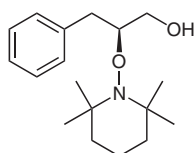
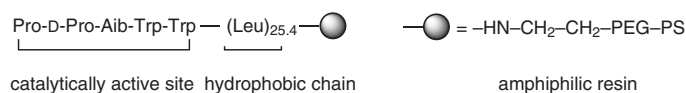
K. AKAGAWA, T. FUJIWARA, S. SAKAMOTO, K. KUDO* (THE UNIVERSITY OF TOKYO, JAPAN)

Efficient Asymmetric α -Oxyamination of Aldehydes by Resin-Supported Peptide Catalyst in Aqueous Media
Org. Lett. **2010**, *12*, 1804-1807.

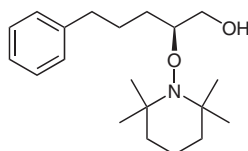
Supported Peptide for Asymmetric α -Oxyamination of Aldehydes



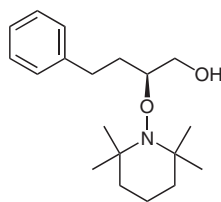
Peptide catalyst 1:



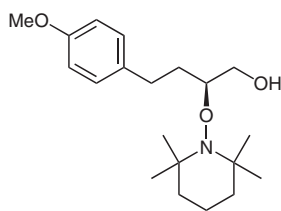
75% yield, 93% ee



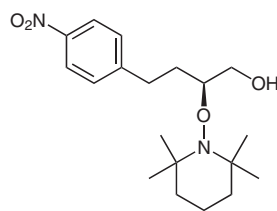
73% yield, 87% ee



87% yield, 90% ee



84% yield, 88% ee



76% yield, 87% ee

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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Category

Polymer-Supported Synthesis

Key words

asymmetric α -oxyamination

peptide catalysis

aqueous media

SYNFACTS
of the month