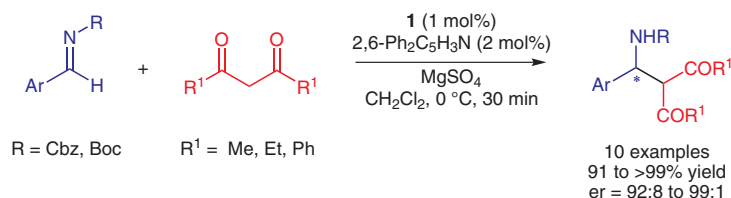


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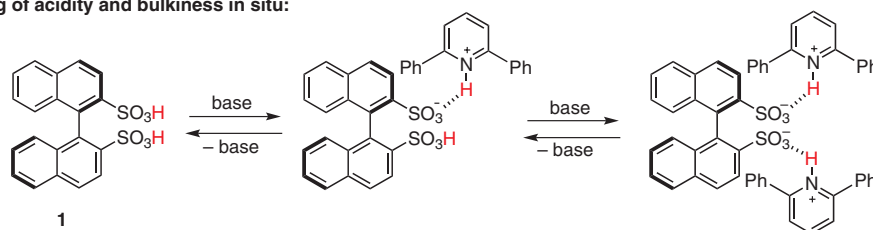
Pyridinium 1,1'-Binaphthyl-2,2'-disulfonates as Highly Effective Chiral Brønsted Acid-Base Combined Salt Catalysts for Enantioselective Mannich-Type Reaction

J. Am. Chem. Soc. **2008**, *130*, 16858-16860.

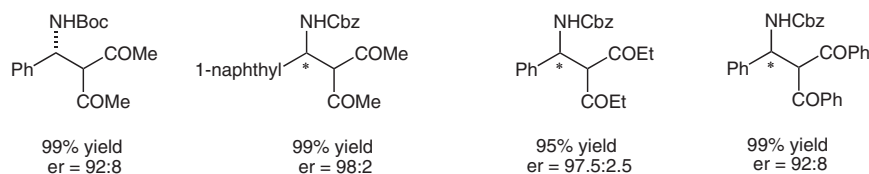
Chiral Brønsted Acid-Base Pyridinium Disulfonate Catalysts



Tuning of acidity and bulkiness in situ:



Selected examples:



Significance: By combining chiral disulfonic acid **1** and achiral 2,6-diphenylpyridine the authors obtain tailor-made Brønsted acid-base organocatalysts for a direct Mannich-type reaction. Excellent yields and enantioselectivities were achieved with this concept.

Comment: The authors use an original and elegant strategy for high enantioinduction in comparison to the generally applied strategy of substitution at the 3,3'-positions with bulky substituents in analogous binaphthyl phosphoric acid catalysts (e.g., see: Akiyama et al. *Angew. Chem. Int. Ed.* **2004**, *43*, 1566). By forming a salt of chiral disulfonic acid **1**, which has been tested earlier as organocatalyst by List and co-workers (*Chem. Asian J.* **2008**, *3*, 430; *Adv. Synth. Catal.* **2008**, *350*, 962), and bulky pyridines, the authors circumvent the often tedious synthesis of the 3,3'-substituted derivatives. On the other hand, the acidity is reduced this way and therefore the substrate scope might be limited to easily activated compounds.

SYNFACTS Contributors: Benjamin List, Frank Lay
Synfacts 2009, 2, 0207-0207 Published online: 22.01.2009
DOI: 10.1055/s-0028-1087593; Reg-No.: B12308SF

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Category

Organo- and Biocatalysis

Key words

disulfonic acids

Mannich-type reaction

pyridinium salts

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of the month