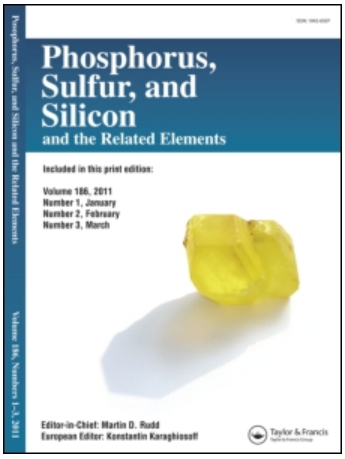

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Diastereoselective Sulfimidation of Sulfides Having a Chiral Auxiliary

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A highly diastereoselective imidation (up to 91% de) of diaryl sulfides having a chiral oxazolinyl group at the *ortho*-position to the corresponding sulfimides has been achieved using TsN=IPh as a nitrene transfer reagent in the presence of $Cu(OTf)_2$ (10 mol%).

Keywords: 1,6-asymmetric induction; diastereoselective sulfimidation; organic sulfides; sulfimides

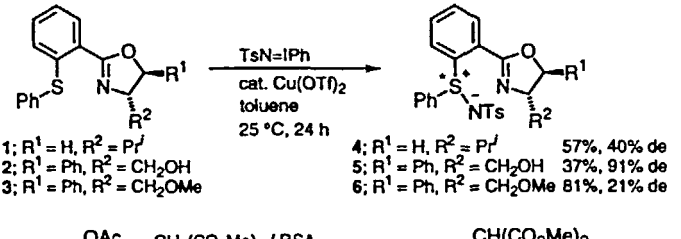
INTRODUCTION

We have recently developed a direct catalytic enantioselective sulfimidation of prochiral sulfides to chiral sulfimides with TsN=IPh in the presence of CuOTf and the chiral 4,4'-disubstituted bis(oxazoline) ligand.[1] Williams *et al.* have recently reported a highly diastereoselective oxidation of aryl sulfides containing a chiral oxazoline and demonstrated that the produced chiral sulfoxides work as effective ligands for asymmetric palladium-catalysed allylic substitution.[2] We herein present the catalytic diastereoselective imidation of similar diaryl sulfides having a chiral auxiliary on an aryl moiety with TsN=IPh.

RESULTS AND DISCUSSION

The $Cu(OTf)_2$-catalyzed diastereoselective imidation of sulfides **1–3**

having an enantiomerically pure 4-isopropyl, 4-hydroxymethyl or 4-methoxymethyl moiety on oxazoline ring with TsN=IPh has been successfully carried out to give the corresponding chiral sulfimides **4–6** in good yields, respectively (eq. 1). Thus, the imidation of the sulfide **2** could be performed in toluene in the presence of 10 mol% $Cu(OTf)_2$ at 25 °C for 24 h to afford the corresponding chiral sulfimide **5** in 37% isolated yield with an excellent level of diastereoselectivity (91% de). Furthermore, we envisaged to use an enantiomerically pure sulfimide as a chiral ligand in an asymmetric allylic substitution (eq. 2). The chiral sulfimide (–)-**6** was obtained in a pure form by only one recrystallization from $AcOEt/Et_2O$. Although the enantioselectivity of this reaction is not yet satisfactory, we are sure that this is the first example of the use of the chiral sulfimide as a ligand for transition metal-catalysed reaction.



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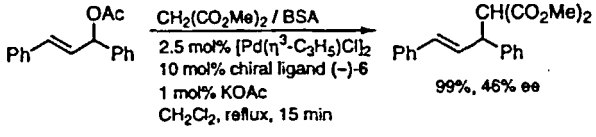

(2)

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[2] J. F. Bower, C. J. Martin, D. J. Rawson, A. M. Z. Slawin and J. M. J. Williams, *J. Chem. Soc., Perkin Trans. 1*, 333 (1996) and references cited therein.