

ABSTRACT

SYNTHESIS, RESOLUTION, CHARACTERIZATION, AND REACTIVITY OF (R)-(+)-N,N-DIMETHYL-(1- FERROCENYLETHYL)AMINE AND ITS MERCURY (II) AND RUTHENIUM (II) DERIVATIVES

The reaction of ferrocencarboxaldehyde (**2**) with dimethylamine in the presence of NaHSO₃ produced a racemic mixture of N,N-dimethylamino-1-ferrocenylacetonitrile (**3a-3b**) which, after isolation and purification, was allowed to react with the CH₃MgCl in dry ether to afford a racemic mixture of N,N-dimethyl-(1-ferrocenylethyl) amine (**4a-4b**). The **4a-4b** mixture was resolved (using natural tartaric acid) to obtain the (R)-(+)- enantiomer (**4a**). A lithiation / trans-mercuration sequence (using t-butyl lithium and HgCl₂) performed on compound **4a** produced the mercury(II) derivative **7a** which features both central and planar chirality. Trans-metallation of compound **7a** with [(C₆H₆)RuCl₂]₂ in methylene chloride gave the ruthenium(II) derivative **1** which has an open (non-cyclic) structure. All compounds were characterized by ¹H-NMR and UV-Vis spectroscopy, and by cyclic voltammetry (CV). Compounds **4a-4b** and **7a** were tested for their potential as chiral auxiliaries in the asymmetric addition of diethylzinc to benzaldehyde and were found to be inactive in that capacity.

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