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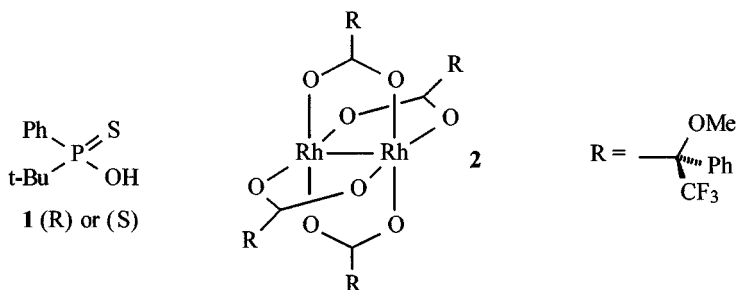
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CHIRAL DISCRIMINATION OF ORGANOPHOSPHORUS COMPOUNDS BY MULTINUCLEAR MAGNETIC RESONANCE IN THE PRESENCE OF A CHIRAL DIRHODIUM COMPLEX

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There are three methods described in literature which use chiral auxiliaries to distinguish enantiomers by NMR spectroscopy: chiral derivatization agents (CDAs), chiral lanthanide shift reagents (CLSRs), and chiral solvating agents (CSAs). Among the CSAs optically active (R) or (S) phosphinothioic acid **1** turned out to be very useful, especially for heteroatom compounds.¹ Recently, we found that enantiomerically pure dirhodium complex (R) $\text{Rh}_2(\text{MTPA})_4$ **2** is a good auxiliary for chiral recognition of a variety of organic compounds by using ^1H and/or ^{13}C NMR spectroscopy.²



SCHEME 1

The dirhodium method works particularly well with functional groups which are soft bases. Therefore, it is a good supplement to the

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methods using CLSRs which are known to complex rather hard bases. However, neither CLSRs nor the acid **1** are applicable to P-chiral -thiono or -selenono derivatives. On the contrary, the diastereomeric complexes of **2** with the P = S and P = Se derivatives exhibit significant differences in the chemical shifts which allows their determination by ^1H , ^{13}C , and ^{31}P NMR spectroscopy.³

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