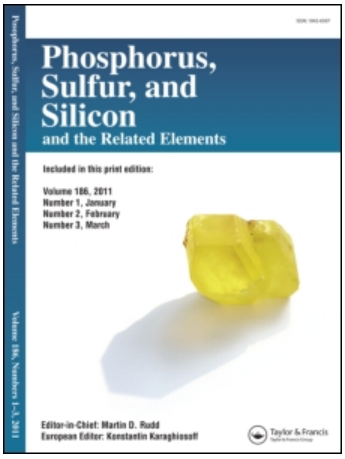


Phosphorus, Sulfur, and Silicon and the Related Elements
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713618290

Chiral Discrimination of Organophosphorus Compounds by Multinuclear Magnetic Resonance in the Presence of a Chiral Dirhodium Complex

S. Rockitt[a]; D. Magiera[a]; J. Omelańczuk[b]; H. Duddeck[a]
[a] Institut of Organic Chemistry, Hannover University, Hannover, Germany [b] Center of Molecular and Macromolecular Studies, PAS, Łódź, Poland

Online publication date: 27 October 2010

To cite this Article Rockitt, S. , Magiera, D. , Omelańczuk, J. and Duddeck, H.(2002) 'Chiral Discrimination of Organophosphorus Compounds by Multinuclear Magnetic Resonance in the Presence of a Chiral Dirhodium Complex', Phosphorus, Sulfur, and Silicon and the Related Elements, 177: 8, 2079 — 2080
To link to this Article: DOI: 10.1080/10426500213426
URL: http://dx.doi.org/10.1080/10426500213426

Phosphorus, Sulfur and Silicon, 2002, Vol. 177:2079–2080

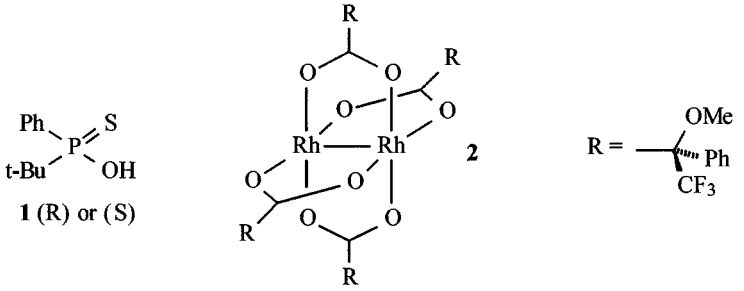
1042-6507/02 $12.00 + .00
DOI: 10.1080/10426500290094882

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

S. Rockitt,[a] *D. Magiera,*[a] *J. Omelańczuk,*[b] *and H. Duddeck*[a]
Hannover University, Institut of Organic Chemistry, Hannover, Germany[a] *and Center of Molecular and Macromolecular Studies, PAS, Łódź, Poland*[b]

(Received July 29, 2001; accepted December 25, 2001)

There are three methods described in literature which use chiral auxiliaries to distinguish enantiomers by NMR spectroscopy: chiral derivatization agents (CDAs), chiral lantaninde 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)Rh_2(MTPA)$_4$ **2** is a good auxiliary for chiral recognition of a variety of organic compounds by using ^{1}H 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

Address correspondence to S. Rockitt, Hannover University, Institut of Organic Chemistry, Hannover, Germany.

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 ^{1}H, ^{13}C, and ^{31}P NMR spectroscopy.[3]

REFERENCES

[1] J. Omelańczuk and M. Mikołajczyk, *Tetrahedron: Asymmetry*, **7,** 2687 (1996).
[2] S. Rockitt, H. Duddeck, A. Drabczyńska, and K. Kiec-Konowicz, *Eur. J. Org. Chem.*, 4389 (2000).
[3] S. Rockitt, H. Duddeck, and J. Omelańczuk, *Chirality*, **13,** 214 (2001).