Tetrahedron Vol. 48, No. 27, p. xi, 1992 Pergamon Press Ltd Printed in Great Britain

Preface

Titanium has been used to perform a wide variety of different reactions in organic chemistry. These include $TiCl_4$-mediated Friedel-Crafts reactions, $Ti(OR)_4$-promoted transesterifications, olefin-metathesis and the all-important Sharpless epoxidation. Due to space limitation and the fact that several relevant reviews have already appeared, these topics are not considered in this Tetrahedron Symposium-in-Print.

The emphasis in the following collection of papers is on recent developments in the area of organotitanium reagents in organic synthesis. Although the older literature contains sporadic reports on the preparation of such organometallics, it was not until the seminal work of Karl Ziegler concerning ethylene polymerization that real interest in the synthesis and characterization of organotitanium reagents was ignited. An early example is CH_3TiCl_3, which was synthesized and screened as a possible Ziegler-Natta polymerization catalyst. However, such compounds were not tested as possible reagents in organic synthesis. This development began in 1979/80, when it was discovered that many organotitanium reagents are more selective in carbonyl additions and in certain substitution reactions than their magnesium or lithium counterparts. It became clear that the transmetalation of classical "carbanions" using titanating agents of the type $ClTiX_3$ ($X = Cl, OR, NR_2$) produces new reagents which display a high degree of chemo-, regio- and stereoselectivity. In essence, ligand effects had been introduced into "carbanion chemistry". At the same time, limitations of this concept became visible.

This Symposium is not an exhaustive review of progress in the area. Rather, important highlights and trends are presented. For example, several authors describe catalytic enantioselective C-C bond forming reactions. Research has been included which does not involve real organotitanium intermediates. An example is the Mukaiyama aldol addition involving the addition of an enolsilane to an aldehyde in the presence of $TiCl_4$. This reaction is a milestone in modern organic synthesis, but its precise mechanism has remained unclear until the publication of this Symposium-in-Print.

I am enthusiastic about this Symposium, and I am certain that organic chemists will enjoy reading it.

Manfred T. Reetz
Max-Planck-Institut für Kohlenforschung
Kaiser-Wilhelm-Platz 1
4330 Mülheim/Ruhr, Germany