
Volume Editor's Preface

This volume covers compounds with transition metal–carbon π -bonds for groups 10–8. It is the first volume in the Organometallics category and the first volume of the **Science of Synthesis** series. The elements covered include Ni, Pd, Pt, Co, Rh, Ir, Fe, Ru, and Os and the range of organic π -bonds includes arene, pentadienyl, cyclopentadienyl, diene, allyl, alkyne, and alkene moieties.

The decision to create a series of volumes on organometallics was based on an appreciation of the increasing role that metal complexes play as reagents in organic synthesis. In addition, organometallic complexes are widely used as catalysts or precatalysts in many organic transformations and thus their importance has increased dramatically over the past quarter century.

When work on this volume began, the vision of what **Science of Synthesis** would aim to do was clearly delineated but the details of how this concept would be implemented were not fully established. As a result, the authors, the volume editor, the series editors, and the staff at the publishing house all worked together to transform the vision into a functioning template for the authors to follow as they searched for data and categorized it before writing their contributions.

The two main issues that had to be resolved for the volumes on organometallics were how to categorize compounds containing more than one type of π -complex and how to include catalytic processes where the π -complex was not isolated but one or more π -complexes were proposed as likely intermediates. The former problem is illustrated by considering a hypothetical cyclopentadienyl–metal–alkene complex where a η^5 and η^2 moiety are present. The hierarchical order we used as a guiding principle was that the highest hapticity moiety should take precedence over the lesser hapticity component. This system generally worked well but sometimes the “interesting” part of the molecule (i.e., either the reactive part or the component introduced last) was the lower hapticity element and a reader would be inclined to search under this type of π -complex. In these instances the preparation of the complex might be found in either subsection (or both) of a particular chapter and we hope readers will appreciate that some decision had to be made about what part of the molecule was “interesting” since this often depends on one's perspective!

Both **Houben–Weyl** and **Science of Synthesis** are “product based” and this created the potential for problems in including catalytic process. This challenge was addressed by devising a special section under the general heading *Applications in Organic Synthesis*. Here the authors included examples where π -complexes are proposed but not isolated. The products do not usually contain an organometallic π -bond but their intermediacy is widely accepted and we felt it was necessary to include these reactions if the volume was to be of maximal value.

I would like to thank Guido F. Herrmann and Barry M. Trost for their assistance during the developmental stages of the volume and M. Fiona Shortt and Leigh Murray for professional, efficient, and friendly assistance throughout the entire process. My thanks are extended to my research group who read early drafts of the chapters and offered helpful suggestions and to my young children who waited patiently for me to finish reading galley proofs.

Volume Editor
Mark Lautens

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