COMPLEXES AND FIRST-ROW TRANSITION ELEMENTS

A Macmillan Chemistry Text

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To Wendy

Preface

Transition-metal chemistry is very largely concerned with the chemistry of complexes and so it is fitting therefore that both subjects should be dealt with in the same textbook. We deal here with the general aspects of complexes first and then with the specific chemistry of the first-row transition elements. For several reasons this book deals only with the chemistry of the first-row transition elements at a level suitable for first- or second-year undergraduates in British universities. The chief of these is that the first member of each group of transition elements differs significantly in properties from the subsequent members, and thus vertical comparisons within the groups are less valuable than horizontal ones. Further, the explanations of the magnetic and spectral properties are more simply dealt with in the first-row transition elements and the aqueous chemistry can be systematised more easily. The second- and third-row transition elements are covered in a companion volume (S. A. Cotton and F. A. Hart: *The Heavy Transition Elements*), which also gives a more detailed treatment of organometallic compounds and the bonding therein (as well as other topics such as metal carbonyls and metal-metal bonding) at a level more appropriate to final-year honours students in British universities.

In the present text a little basic physical chemistry is assumed, in particular the concepts of atomic orbitals, elementary kinetics and thermodynamics and electrode potentials. Throughout the text emphasis is placed on the properties and reactions of metal aquo-ions and the donor-acceptor properties of transition-metal compounds. In the author's opinion a knowledge of these concepts can give the student a general understanding of the more elementary reactions of transition-metal compounds.

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David Nicholls

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