

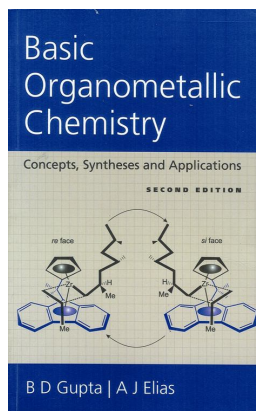
with very young human infants, none of which solves the issue of innateness as already mentioned, although they certainly make for interesting reading. What follows in the remaining 100 pages or so has nothing to do with babies at all, but rather moves on disconnectedly to racial issues, examples of the development of 'group identity' behaviour within school summer camps reminiscent of William Golding's classic social psychology novel *Lord of the Flies*, and several rather graphic sections such as the origins of disgust. I wished then that the book was shorter.

Considering the contemporary culture of sound bites, information capsules and such pabulum, where textured arguments are often lost, one bemoans a lost opportunity to explain the evolution of ethics to a lay audience, and to present newer findings within a multiplicity of contexts. The phylogeny and ontogeny of morality as well as the new science of moral psychology deserved better treatment.

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Basic Organometallic Chemistry: Concepts, Syntheses and Applications. B. D. Gupta and A. J. Elias. Universities Press (India) Private Ltd, Hyderabad. 2013. 2nd edn. 513 pp. Price: Rs 695.

The book under review is a considerably improved and updated version of the earlier edition brought out in 2009 and fulfils the needs of chemistry students at the postgraduate, and senior undergraduate levels as well as research scholars. It is an admirable blend of basic facts, conceptual framework and industrial applications. The coverage of the various topics is comprehensive and the text is enlivened with box items describing historical landmarks, personalities involved in the development of the subject, interesting episodes and real-world applications.

Organometallic chemistry, broadly defined as the chemistry of compounds containing metal–carbon bonds, straddles between the traditional bounds of inorganic and organic chemistry, yet transcends both. Prior to 1950, organometallic chemistry of main group elements and their applications in organic synthesis had developed significantly whereas knowledge of transition metal organometallics was sparse. The serendipitous synthesis of dicyclopentadienyl iron (ferrocene) in 1951 by two groups (Kealy and Pauson; Miller, Tebboth and Tremaine) and the recognition of its sandwich structure independently by Wilkinson and Fischer in the following year, heralded a renaissance in transition metal organometallic chemistry, which has witnessed phenomenal growth during the last 60 years. New bonding paradigms have emerged. Compounds with unusual structures and reactivity have been synthesized. Applications of organometallics in industrial catalysis and their use as reagents in organic synthesis have grown rapidly. The importance of the field is reflected in the award of several Nobel

Prizes (K. Ziegler and G. Natta, 1955; E. O. Fischer and G. Wilkinson, 1973; W. S. Knowles and R. Noyori, 2001; Y. Chauvin, R. H. Grubbs and R. R. Schrock, 2005 and A. Suzuki, R. F. Heck and E.-I. Negishi, 2010) over the years. The book has succeeded in capturing the essence of these developments and conveying the vibrant nature of the field.

The chapter on 'Eighteen electron rule' provides the theoretical basis for understanding the structure and bonding in transition metal organometallic compounds. This is followed by the descriptive chemistry of metal carbonyls, complexes of alkenes, alkynes, carbenes, carbynes, metallocenes and complexes of other cyclic and acyclic polyenyl ligands (chapters 5–7) and a discussion on the various types of reactions in organometallic chemistry (chapters 8 and 9). The biggest impact organometallic chemistry has made is in industrial catalysis. The book makes an extensive coverage of all important aspects of these developments in seven chapters (chapters 11–17), constituting nearly one-third of the book.

I am particularly delighted to see separate chapters on phosphines and *N*-heterocyclic carbenes, metal clusters, organometallic polymers and the rapidly emerging area of bioorganometallic chemistry. The inclusion of topics such as stereochemical non-rigidity in organometallic compounds, isolobal analogy and Jemmis' mno rules is commendable.

The strength of the book lies in its lucid exposition of the concepts and a large number of exercises at the end of each chapter with solutions provided at the end of the book.

I have a minor criticism which does not detract from the overall excellence of the book. I would like to see a future edition of the book to include a few chapters on main group organometallic chemistry, with emphasis on the spectacular developments in multiple bonding of heavier main group elements. Some of the chapters in the present edition may be slightly abridged in order to keep the length of the new edition not too unwieldy. An alternative would be to rename the book as 'Transition Metal Organometallic Chemistry'.

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