Preface

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Organometallic chemistry is one of the oldest sub-disciplines of chemical sciences and has its origin in the early nineteenth century. This frontier area of research, being at the interface of the classical organic and inorganic chemistry, has benefited from both in evolving new concepts and synthetic methodologies. Prior to the World War-II, only a few compounds, like Grignard reagents, Ni(CO)_4 in Mond process, organoarsenic compound in medicine, tetraethyl lead as gasoline additive, etc. received commercial significance. The industrial revolution of mid twentieth century changed the face of organometallic chemistry as a number of industrial processes, like Ziegler–Natta process for low pressure alkene polymerization, and other homogeneous catalytic process, organotin compounds as biocides/agrochemicals/antifouling agents, etc., as well as development of new theories (e.g. Wade–Mingos concept of bonding, Hoffmann’s isolobal analogy, etc.) and new compounds (e.g. ferrocene, metal allyls, carbene and carbyne derivatives) have emerged. The field has grown in depth and width at a very fast pace in the past half century.

The ripples of this rapidly growing field can be seen not only in traditional homogeneous catalytic processes but also in the emerging technologies. Organometallic compounds are playing a pivotal role in electronic and optoelectronic industries, materials science, health care, speciality polymers, etc. Ever increasing demand for new materials has opened up new avenues in organometallic chemistry. Organometallic precursors for deposition of thin

films of different materials (metallic, semiconductors, and insulators) by chemical vapour deposition are now routinely used in industry whereas cyclometalated iridium complexes and BODIPY, for example, find applications as luminescent materials in display devices. New approaches are also emerging for environmentally benign organic synthesis.

Clearly organometallic chemistry, over a period, has made a great impact in diverse areas of science and technology. Interactions between organometallic chemists and scientists from rather unrelated fields (physicists, biologists, engineers, etc.) has been mutually beneficial and has really paid a big dividend.

In the light of above perspective, the Editorial Board of the Proceedings of the National Academy of Sciences decided to bring out a special issue on organometallics covering both original research papers and short review articles. For this purpose Dr. V. K. Jain, one of the distinguished organometallic chemists, was requested to guest edit this special issue. We thank him for accepting our invitation. It is hoped that the readers will find the articles of this special issue stimulating and interesting.

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