

Preface

In recent years, a number of books devoted to various aspects of trace metal speciation and analysis have been published. For organometal(loid) and alkylated metal(loid) compounds in particular, the rapid progress in the field of speciation becomes evident when the second edition of Craig's *Organometallic Compounds in the Environment* (J. Wiley & Sons, 2003) is compared with the first edition published in 1986. The growing number of publications in the environmental and life sciences concerned with the biogeochemical cycling and the toxicity of metal(loid)s indicates the increasing awareness that reliable data on the occurrence, reactions, and fate of such species are needed.

In the course of the international *Workshop on Organometallics in the Environment* at the University of Essen in 2002, it was proposed to publish the workshop proceedings supplemented with additional data in form of a book. The wide range of articles on the current state and future perspectives of speciation presented in this book by chemists, biologists, toxicologists, and physicians reflects the multidisciplinary nature of that workshop. The interdisciplinary exchange of views particularly revealed that, in contrast to the progress in analytical techniques made in recent years, data on the toxic effects of organometal(loid) compounds and the underlying mechanisms are still sparse. A more intensive transfer of information from fields such as geosciences or marine chemistry to those of microbiology, neurochemistry, and genomics is required to assess the role of organometal(loid) species in living systems.

To pursue this aim in an interdisciplinary effort, several authors of this book work closely together in a joint project funded by the German Research Foundation (Deutsche Forschungsgemeinschaft, Grant No. FOR 415). While the majority of the articles represent original research papers, a number of review-type papers give short overviews on the environmental and analytical chemistry of organometal(loid) species (Ch. 1 and 2) as well as on the geno- and neurotoxicity of these compounds (Ch. 11, 14 and 15). The series of articles begins with an introduction to the environmental chemistry of organometallic compounds (Ch. 1), followed by an overview on instrumental analytical techniques used in metal(loid) speciation (Ch. 2). Particular emphasis is laid on arsenic speciation in environmental systems (Ch. 3) and in biomonitoring studies (Ch. 4). Biotransformation processes in microorganisms (Ch. 5, 7, and 8) and in man (Ch. 6 and 10) are described, and a chemical modelling study concerning organometallics/DNA interactions is presented (Ch. 9). Aspects of genotoxicity (Ch. 11 to 13) and neurotoxicity of organometal(loid)s (Ch. 14 to 16) are discussed in detail. The last two chapters of the book comprise the results of panel discussions on current analytical (Ch. 17) and toxicological issues (Ch. 18) concerning organometal(loid) compounds.

The editors are confident that newcomers as well as experienced scientists will find useful information, new ideas, and stimulating hypotheses in many of the following chapters.

Last but not least, we would like to thank staff members of the Institute of Environmental Analytical Chemistry, in particular Rita Lehmann, for substantial help in preparing and editing this book.

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