This is especially valuable for students or younger researchers developing an interest in these topics. The often critical but always very fair assessments, the personal outlooks and comments, as well as the numerous examples given are surely a positive quality of the book and should also appeal to experienced academic and industrial scientists.

Prof. Dr. Frank Böckler
Ludwig Maximilians University, Munich (Germany)

Metallochemistry of Neurodegeneration: Biological, Chemical and Genetic Aspects

By *Henryk Kozlowski*, *David R. Brown*, and *Gianni Valensin*.

RSC, Cambridge 2006. xii + 281 pp., hardcover £89.95.—ISBN 978-0-85404-360-6

The World Health Organization estimates that neurological disorders currently afflict over 1 billion people, with an estimated 24 million of those suffering from Alzheimer's disease (AD), which occurs almost exclusively in people over the age of 65. These disorders place a significant burden on the patients, their families, and the health care infrastructure. Addressing neurological disorders represents a significant emerging challenge as the world population increases in both size and age. For example, Alzheimer's Disease International projects that the number of AD cases will double every 20 years, which means that over 80 million people will suffer from the disease by 2040. Both the prevalence and severity of neurological disorders have motivated researchers to study disease pathologies and to search for therapeutic strategies. A growing body of evidence from these studies suggests a connection exists between the incidence of neurological diseases and either an imbalance in metal ion concentrations or a malfunction of a metalloenzyme.

In their new book, Kozlowski, Brown, and Valensin provide an overview of metalloneurochemistry and review some of the significant research from the field reported in the last 10–15 years. A growing number of bioinorganic chemists have recently joined the efforts of neuroscientists to study the chemistry of metals in the central nervous system (CNS) and the possible role of metals in neurological disorders. This book presents the relationship between metals and brain function from two different perspectives. First, several chapters are dedicated to four of the most prominent neurodegenerative disorders: AD, Parkinson's disease, amyotrophic lateral sclerosis, and prion diseases, and the proposed roles of various metals in these diseases. The second approach involves a survey of specific metals implicated in multiple disorders. Both the natural functions of these metals and detrimental consequences of exposure or overexposure to these metals are evaluated. Included in this overview are the clinical applications of lithium and the neurotoxicity of aluminum, which are both metals without functions in normal mammalian biology.

The most extensive discussion in the book is dedicated to copper. Mechanisms of copper homeostasis and entry into the CNS are presented in the context of widespread diseases, like AD, and also with respect to rarer disorders such as Wilson's and Menkes' diseases, which have been highlighted in recent studies of metallochaperones. The links between prion diseases such as bovine spongiform encephalopathy (mad-cow disease) and copper are analyzed with examples from genetic, biochemical, and coordination chemistry studies, providing a balanced presentation for readers with different scientific backgrounds. Although this is an instructive approach, the emphasis on copper may lead the uninitiated reader to erroneously conclude that metals such as iron, zinc, and calcium are of lesser importance in understanding neurological disorders. While it would have been impossible to provide a comprehensive picture of all the metal chemistry implicated in neurodegeneration in this book, it does provide an excellent springboard for initiating a study of the these subjects when used in conjunction with the primary literature and other books that review research at the interface of inorganic chemistry and neuroscience.

Studying the chemistry of aging and age-related diseases at the molecular level provides a promising avenue to address these issues, and the final chapter of the book examines the application of lanthanide-based MRI agents in the diagnosis and study of brain-related diseases. An increasing number of young scientists, including chemists, are choosing to focus on metalloneurochemistry because of the global health crisis associated with neurological disorders; however, finding effective therapeutics for existing neurological disorders and practicing preventative medicine remains challenging, as disease pathogenesis is not fully understood. Even with the abundance of data acquired by various methods to date, new investigators in the field can find numerous unanswered questions that cannot be studied with existing technologies. Solving many of the problems described in this book will require today's scientists to make innovations in MRI reagents, fluorescent sensors, caged complexes, pro-chelators as well as chemically modified biomolecules and new model systems to study disorders. Subsequent treatment of diseases will require similar advances in synthetic, biological, and coordination chemistry. This book conveys the urgent need for such research and development, and should motivate researchers in the field to continue to push the boundaries of metalloneurochemistry.

Prof. Shawn C. Burdette
University of Connecticut (USA)
DOI: 10.1002/cmdc.200800138

Thermal Analysis of Pharmaceuticals

Edited by *Duncan Q. M. Craig* and *Mike Reading*.

CRC Press, Boca Raton 2007. 416 pp., hardcover £79.99.—ISBN 978-0-8247-5814-1

Working in the field of solid-state analysis of pharmaceuticals for many years, I accepted the invitation to review this

