

MOST COMPREHENSIVE & UP-TO-DATE RESEARCH ON PORPHYRINS

edited by

Karl M Kadish

University of Houston, USA

Kevin M Smith

Louisiana State University, USA

Roger Guillard

Université de Bourgogne, France

<http://www.worldscientific.com/series/porsci>



Volume 46: Modern Aspects of Porphyrinoid Chemistry

The current volume comprehensively summarizes key aspects involved in the synthesis, characterization and use of these compounds, as well as computational methodologies for the design of novel tetrapyrroles whose structural and electronic properties are described. Each chapter is authored by an expert or group of experts in the field who were asked to write "a review for the ages" and we anticipate that what is written in this volume will remain relevant for at least the next 15 years, and possibly longer.

This volume should be considered as required reading for both new and experienced researchers in a number of sub-disciplines where tetrapyrroles are studied or utilized in a variety of applications. A complete understanding of the chemistry of these compounds necessitates not only a knowledge of what has been accomplished in the area of synthesis and characterization but also a knowledge of what is possible in the future when using porphyrins and related tetrapyrroles as key components for applications in catalysis, energy production and biomedical applications.

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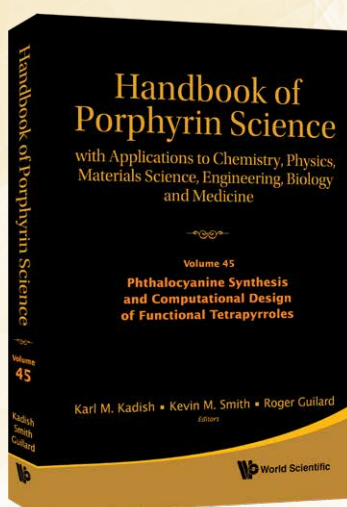
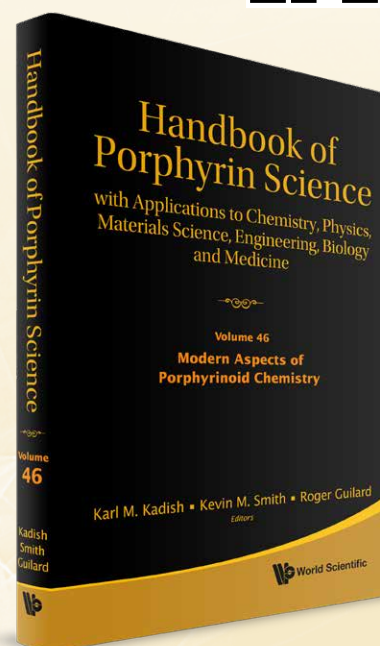
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Volume 45: Phthalocyanine Synthesis and Computational Design of Functional Tetrapyrroles

The overall emphasis of Volume 45 of the Handbook of Porphyrin Science series, centers on synthetic methodology and processes, with a diversion in Chapter 217 to include predictive computational methodology, and in Chapter 216 to address the importance of chirality in tetrapyrrole systems. All three chapters will be of interest to researchers in the field and should provide powerful tools for anyone involved in the chemistry of phthalocyanines, porphyrins and related systems.

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“Vivid testimony to the continuing broad interest and deep impact of the chemistry of these Pigments of Life.”

Jean-Marie Lehn, Nobel Laureate,
Chemistry College de France, France

“Everyone interested in the biological and chemical properties of porphyrins and related macrocycles will want to own the Handbook.

The editors have done a terrific job in linking together the volumes in this very valuable resource for investigators in the chemical and biological sciences.”

Harry B Gray, Wolf Laureate, Chemistry
California Institute of Technology, USA”

Porphyrins, phthalocyanines and their numerous analogs and derivatives are materials of tremendous importance in chemistry, materials science, physics, biology and medicine. They comprise the red color in blood (heme) and the green in leaves (chlorophyll); they are also excellent ligands that can coordinate with almost every metal in the Periodic Table. Grounded in natural systems, porphyrins are incredibly versatile and can be modified in many ways; each new modification yields derivatives that can demonstrating new chemistry, physics and biology, with a vast array of medicinal and technical applications.

Because porphyrins are currently employed as platforms for study of theoretical principles and applications in a wide variety of fields, the *Handbook of Porphyrin Science* represents a timely ongoing series dealing in detail with the synthesis, chemistry, physicochemical and medical properties and applications of polypyrrole macrocycles. It is noteworthy that every year, new applications for tetrapyrrole ligands are developed and exploited.

Professors Karl Kadish, Kevin Smith and Roger Guilard are internationally recognized experts in the research field of porphyrinoids, each having his own separate but complementary area of expertise in the field. Between them, they have published over 1750 peer-reviewed papers and jointly edited more than 55 books on diverse topics related to porphyrins and phthalocyanines. In assembling the set of new volumes of this unique handbook, they have selected and attracted the very best scientists in each sub-discipline as contributing authors.

The *Handbook of Porphyrin Science* will prove to be a modern authoritative treatise on the subject as it continues as a collection of up-to-date works by world-renowned experts in the field. Complete with hundreds of figures, tables and structural formulas, and thousands of literature citations, all researchers and graduate students in this field will find it to be an essential, major reference source now, and for many years to come.

Key Features

- Consists of thousands of pages of articles written by internationally recognized experts in the field along with thousands of relevant literature citations
- Biological and medical relevance of porphyrins is linked to their chemical, physical and structural features
- Vast array of information on porphyrin science consolidated into an up-to-date multivolume series of clear and concise coverage, including hundreds of figures, tables and structural formulas
- Of interest to chemists, physicists, material scientists, polymer scientists, spectroscopists, electrochemists, electronics and photonics engineers, biochemists, biophysicists, medicinal chemists and clinicians

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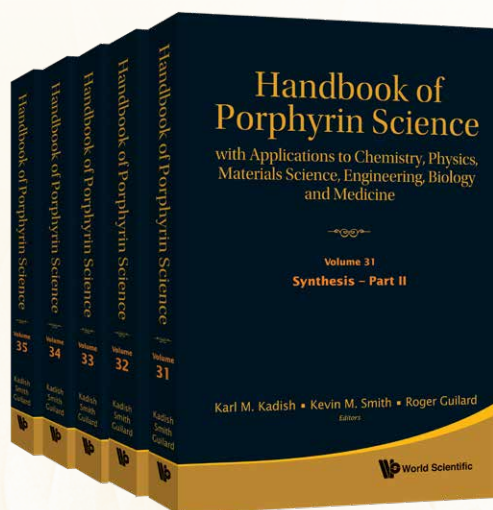
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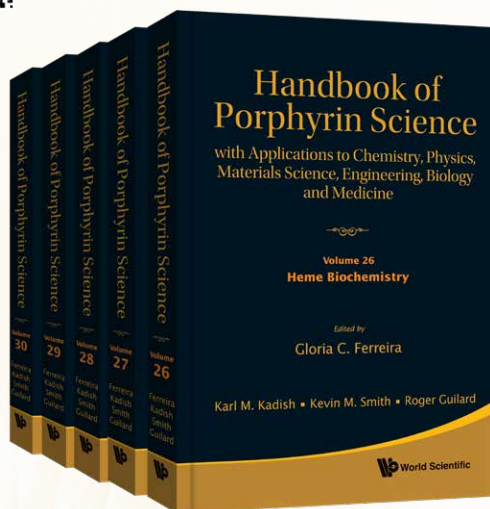
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Guest editor: **Gloria C Ferreira**
(University of South Florida, USA)

This 5-volume set provides a comprehensive review of the most up-to-date research on porphyrin, heme and chlorophyll biochemistry, as well as applications to biomedicine and bio-inspired energy. In-depth coverage of topics along with perspectives on outstanding questions and future research directions by the authors make these volumes an essential resource for both beginning and advanced investigators in the field. It is also suitable for non-experts in porphyrin, who wish to have an overview of the fundamental discoveries and breakthroughs in the porphyrin arena related to medicine and bio-inspired energy.

Bringing together the biochemistry of porphyrin-binding proteins and their clinical relevance and applications to medicine and renewable energy, this set provides readers with an integrated coverage of porphyrin biochemistry. At the same time, it challenges readers with new questions and perspectives of research regarding the role of porphyrin biochemistry in the future of medicine and renewable energy.

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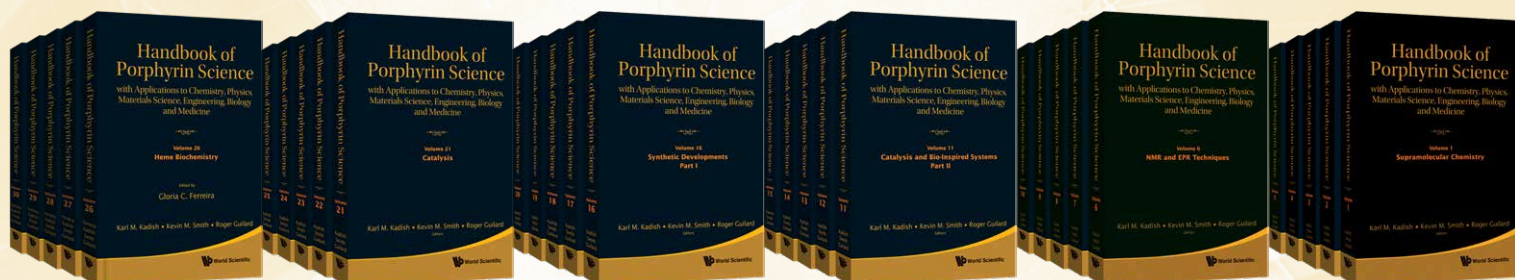
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About the Editors

Karl M. Kadish is Hugh Roy and Lillie Cranz Cullen University Professor of Chemistry at the University of Houston. He has published more than 640 research papers and edited or co-edited more than 100 books, the majority of which are on topics related to research in the area of porphyrins, phthalocyanines and related molecules. In 2012, Dr. Kadish was awarded the Hans Fischer Lifetime Achievement Award in Porphyrin Chemistry. He is the Editor-in-Chief of the Journal of Porphyrins and Phthalocyanines and has served as President of the Society of Porphyrins and Phthalocyanines since 2000.



Kevin M. Smith is the LSU Foundation James C. Bolton Distinguished Professor of Chemistry in Louisiana State University. Dr. Smith has received the Corday-Morgan Medal and Prize from the Royal Society of Chemistry, UK, the Alfred Bader Award in Bioorganic or Bioorganic Chemistry from the American Chemical Society, USA, and the Robert Burns Woodward Career Achievement Award from the Society of Porphyrins and Phthalocyanines. He has more than 790 publications, has edited or coedited 67 books on the topics of porphyrins and related molecules, and has been awarded eight patents.



Roger Guillard is Professor of Chemistry at the Université de Bourgogne Franche Comté in France. Dr. Guillard has received the "Grand Prix de l'Académie des Sciences, Prix Gaz de France" in 2001, the "Robert Burns Woodward Award in Porphyrin Chemistry" in 2010 and the "Grand Prix Emile Jungfleisch de l'Académie des Sciences" in 2013. He was elected as a fellow of the European Academy of Sciences in 2011 and of the Academia Europaea in 2015. He is the author of 480 papers and reviews, has edited or coedited 72 books on the topics of porphyrins and related molecules and has been awarded 27 patents in the area of heterocyclic chemistry, organometallic and coordination chemistry. His major contributions are both in the area of basic research and applications.

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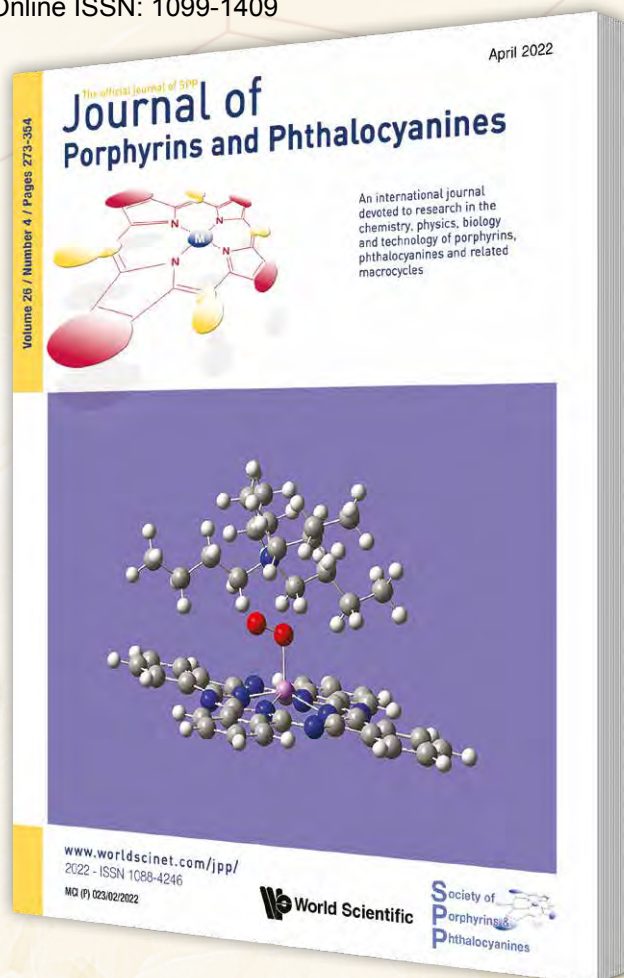
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