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## Chlorophylls and Bacteriochlorophylls

### Biochemistry, Biophysics, Functions and Applications

Chlorophylls are the most obvious natural pigments on Earth where they can be observed even from satellites in outer space: they also sustain life on Earth through their involvement in photosynthesis. With 37 authoritative chapters, this book reviews recent progress and current status of studies on the chemistry, metabolism and spectroscopy of chlorophylls, bacteriochlorophylls and their protein complexes. Also discussed is progress on the applications of the chlorophylls as photosensitizers in photodynamic therapy of cancerous tumours, and as molecular probes in biochemistry, medicine, plant physiology, ecology and geochemistry. With the last book dedicated to chlorophylls published in 1991, and out of print since 1995, this book fills a gap by summarizing the chemical, physical, biological and medical aspects of chlorophyll (and bacteriochlorophyll) research and development, with a focus on the tremendous progress achieved over the past 15 years. The book is aimed equally at advanced students and at both novice and experienced researchers: each section has an up-to-date introductory overview which is followed by a series of concise well-focused and fully-referenced chapters written by experts in (bio)chemistry, (bio)physics, photobiology and photomedicine.

#### From the reviews:

"This excellent book provides a comprehensive, up to date account of the chemistry and biology of chlorophylls and bacteriochlorophylls, written by world experts. Progress in the past few years in this area of science, especially on how these pigments are synthesised and degraded, and how they function in photosynthesis, has been remarkable. All of these recent advances are beautifully set out in this timely compendium, which is, at the same time, both very readable and very complete. The Editors are to be congratulated. It is interesting to see how fundamental research in this area has led to important, unexpected applications such as the treatment of cancers by photodynamic therapy or remote sensing of photosynthetic capacity from outer space. This will be essential reading for all of my research team and, I expect, for every other research group that works with these fascinating molecules." *Prof. R.J. Cogdell, University of Glasgow, Scotland, UK*

"The attempt to understand the perfection of the chlorophylls is the central theme of this book. In today's energy hungry world with renewed interest in solar energy, this collection on the chlorophylls is most timely, covering the latest aspects of chlorophyll research through the scholarship of 70 authorities. With the role of chlorophyll and bacteriochlorophyll in photosynthesis as revealed in these pages, the reality of practical applications of solar energy trapping and conversion becomes an intriguing possibility. These applications will go far beyond the biological process of photosynthesis to include such topics as solar energy conversion, environmental science, medical applications, cosmetics, sun screens, etc. Many of these applications are included in this comprehensive volume. Many new applications will arise as a result of this outstanding collection on the functions and applications of chlorophylls and bacteriochlorophylls." *Prof. James R. Norris, University of Chicago, Illinois, USA*

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