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E.T. Denisov and I.B. Afanas'ev, editors. Oxidation and Antioxidants in Organic Chemistry and Biology, CRC Press, Taylor and Francis Group, Boca Raton, FL, USA, 2005 (xxi + 981 pp., £115.00, ISBN 0-8247-5356-9)

Oxidation of organic compounds by dioxygen is a phenomenon of paramount significance in nature, technology, and life. The liquid-phase oxidation of hydrocarbons forms the basis of several efficient technological processes. Free radicals participate in the oxidation of organic compounds. Hydroperoxides are formed as intermediates and accelerate oxidation. *Oxidation and Antioxidants in Organic Chemistry and Biology* is a comprehensive review of reactions of oxidation for different classes of organic compounds, polymers, and biological processes. The contents of the book are divided into three major parts. Part I deals with chemistry and kinetics of organic compounds oxidation by dioxygen, which include liquid phase oxidation, oxidation of hydrocarbons, alcohols, ethers, carbonyl compounds, amines, amides, esters and polymers etc.

The autoxidation of organic compounds, their mixtures and products promotes their rapid deterioration due to the action of atmospheric oxygen. Products such as rubber, polymers, hydrocarbon fuels, lubricants, organic solvents, food etc. are spoiled due to oxidation by oxygen. Antioxidants are widely used to prevent these undesirable processes. Part II is focussed on the chemical mechanistic information about antioxidants and their action on the autoxidation of hydrocarbons, alcohols, and other organic compounds and polymers.

Free radicals and oxidative processes play an important role in the biological processes. Many physiological processes are mediated by oxygen and nitrogen free radicals. Pathophysiological disorders may be the consequence not only of overproduction but also the insufficient formation of free radicals. Numerous oxidative processes occur in living organisms, which are regulated or unregulated enzymatically. Part III of the book discusses the various issues related to biological oxidation and antioxidants including major initiators of oxidative processes, prooxidant enzymes, role of mitochondria and microsomes in free radical production, non-enzymatic and enzymatic lipid oxidative processes, protein oxidation, DNA damage. Different antioxidants, antioxidant enzymes, free radical and oxidative stress in pathophysiological processes, and major analytical methods of free radical detection are also discussed. The book also includes a CD-ROM, which provides a database of oxidation and antioxidants in organic chemistry.

The book provides up-to-date information about the oxidation of different compounds, antioxidants, and biological oxidation. This comprehensive volume can be excellent source of information not only to the students but also to the persons involved in research and academia.

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A.F. Collings and C. Critchley, editors. Artificial Photosynthesis From Basic Biology to Industrial Application (2005, WILEY-VCH, Verlag GmbH & Co. KGaA, Weinheim) (xxvi + 313 pp., £ 90,ISBN 3-527-31090-8)

Artificial Photosynthesis presents a step-by-step dissection of the photosynthetic component processes, current and future technology for recreating the biochemical and biophysical processes in green plants. Expert scientists and bioengineers discuss the basic equations governing energy conversion, hydrogen generation and carbon fixation, as well as the approaches to engineering processes in a bioreactor in this book. The economic, environmental and social issues associated with photosynthetic generation of energy and biomass are also considered here.

This book begins with Ian Lowe's discussion of social and political issues involved in the implementation of artificial photosynthesis. The comprehensive and integrated model of artificial photosynthesis is presented in chapter 2. The other chapters in this book describing research in artificial photosynthesis are grouped into four sections that parallel the processes of natural photosynthesis: photon energy capture and conversion, photovoltaic current generation, photoproduction of hydrogen, the fuel of next century, and carbon dioxide use.

The open chapter of second section explores the decoupling concept from the point of view of biomimetic solar cell design. The second chapter of this section presents the design of natural photosynthetic antenna systems. Identifying Redox-active chromophores in photosystem II by low-temperature optical spectroscopies is discussed in the next chapter. Chapter 6 and 7 focus on the nature of the special-pair radical cation produced by primary charge separation during photosynthesis and protein-based artificial photosynthetic reaction centres