

The Porphyrins

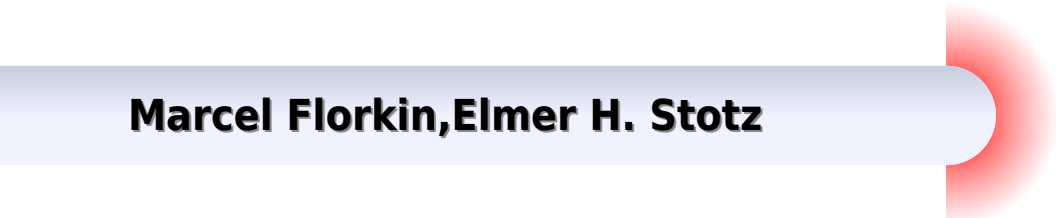
Volume VII

Biochemistry, PART B

EDITED BY
DAVID DOLPHIN

Porphyryns Volume Vii Biochemistry Part B

Marcel Florkin, Elmer H. Stotz



Porphyrins Volume VII Biochemistry Part B:

The Porphyrins V5 David Dolphin, 2012-12-02 The Porphyrins Volume V Physical Chemistry Part C explores the physical chemistry of porphyrins their precursors catabolic derivatives and related compounds The book covers photochemical electrochemical and routes of electron transfer as well as primary redox reactions of porphyrins and metalloporphyrins oxygenation of hemoglobin and the interactions of metalloporphyrins with dioxygen the kinetics of porphyrin metalation and solid state phenomena This volume is organized into 11 chapters and begins with an overview of electron transfer and the mechanisms of oxidation and reduction The discussion then turns to porphyrin photochemical reactions and reversible electron transfer reactions of metalloporphyrins Selected examples in which the oxidized or reduced complexes have been shown to play a biochemical role are provided The following chapters focus on the isolation and characterization of the photosynthetic pigments and their aggregation and coordination properties along with those of the porphyrins and metalloporphyrins The book concludes with an analysis of solid state phenomena in porphyrins and related materials paying particular attention to semiconduction photoconduction and superconduction This book will be of value to inorganic organic physical and biochemists interested in the physical chemistry of porphyrins

The Porphyrins V6 David Dolphin, 2012-12-02 The Porphyrins Volume VI Biochemistry Part A deals with the biochemistry of porphyrins their precursors catabolic derivatives and related compounds The book covers the biosynthesis of porphyrins and chlorophylls the formation and metabolism of bile pigments in animals and plants as well as the synthesis characterization and chemistry of the bile pigments and their derivatives An account of the historical and clinical aspects of porphyrins and bile pigments is also given This volume is organized into 12 chapters and begins with an overview of protoporphyrins and their metabolic intermediates paying particular attention to their synthesis and biosynthesis The discussion then shifts to the biosynthesis of porphyrins and chlorophylls the in vivo formation and metabolism of bile pigments such as biliverdin and bilirubin and yellow green and blue bile pigments The reader is then introduced to bile pigments of plants including phytochrome and phycobiliproteins the general structures and nomenclature of bile pigment derivatives and the Stokvis reaction The book also considers the clinical chemistry of porphyrins and then concludes with a chapter on milestones in the history of bile pigments This book will be of value to inorganic organic physical and biochemists interested in the biochemistry of porphyrins

Molecular and Supramolecular Chemistry of Natural Products and Their Model Compounds Jurgen-Hinrich Fuhrhop, Claus Endisch, 2000-01-03 An assessment of the known properties of natural products and their model compounds to determine their usefulness in biological and medical experimentation as well as in synkinetics the reversible synthesis of noncovalent compounds It explores new techniques such as cryoelectron and scanning force microscopy and solid state NMR spectroscopy of membrane systems There are 500 figures and reaction schemes

The Porphyrins V4 David Dolphin, 2012-12-02 The Porphyrins Volume IV Physical Chemistry Part B focuses on the physical chemistry of porphyrins

their precursors catabolic derivatives and related compounds The book covers nuclear magnetic resonance NMR spectroscopy of diamagnetic and paramagnetic porphyrins and electron nuclear double resonance ENDOR spectroscopy of chlorophylls and related systems It also encompasses electron spin resonance ESR spectroscopy of porphyrin pi cations and anions porphyrin excited states metalloporphyrins hemoproteins and hemes This volume is organized into nine chapters and begins with an overview of NMR theory and the use of NMR spectroscopy to study diamagnetic porphyrins and paramagnetic metalloporphyrins The discussion then shifts to the theory of ENDOR spectroscopy and the application of ENDOR spectroscopy to analysis of chlorophylls ESR of pi cations and anions of porphyrins as well as porphyrin excited states and electron paramagnetic resonance and Mossbauer spectra of hemoproteins The reader is also introduced to ESR and the electronic structure of metalloporphyrins A chapter on Mossbauer spectroscopy of iron porphyrins concludes the book This book is a valuable resource for inorganic organic physical and biochemists interested in the physical chemistry of porphyrins

The Porphyrins V2 David Dolphin, 2012-12-02 The Porphyrins Volume II Structure and Synthesis Part B is devoted to the structure and synthesis of porphyrins their precursors catabolic derivatives and related systems The book also covers nomenclature history geochemistry purification and structural determination of porphyrins metalloporphyrins and mono and polypyrrolic compounds This volume is organized into 10 chapters and begins with an overview of hydroporphyrins paying particular attention to their synthesis and stereochemistry as well as reactivity spectroscopy and analogues This book then discusses the synthesis properties thermodynamic stability and evolution of porphyrinogens The following chapters focus on porphyrins reversibly modified at the periphery by oxidation oxophlorins and by irreversible reactions at the periphery The synthesis of photoexcited porphyrins metalloporphyrins and chlorophylls is covered In addition chapters on linear polypyrroles their metal complexes and macrocycles other than porphyrins are included This book should be useful to inorganic organic physical and biochemists interested in porphyrin chemistry and biochemistry

The Porphyrins V3 David Dolphin, 2012-12-02 The Porphyrins Volume III Physical Chemistry Part A deals with the physical chemistry of porphyrins their precursors catabolic derivatives and related systems The book covers electronic structure and spectroscopy including circular dichroism and magnetic circular dichroism as well as electronic infrared resonance Raman and Zeeman spectroscopy Porphyrin stereochemistry X ray crystallography and mass spectroscopy are also included This volume is organized into 12 chapters and begins with an overview of the optical absorption and emission spectra of porphyrins and the theory by which these facts are understood The discussion then shifts to the electronic states of the iron porphyrin complex in various heme proteins as displayed by the light absorption properties in the visible region of the electromagnetic spectrum The reader is methodically introduced to the electronic absorption spectra and molecular orbital theory of chlorophylls the magnetic optical activity of porphyrins and hemoproteins and circular dichroism studies of hemoproteins The book also examines the mass spectra and infrared spectroscopy of porphyrins resonance Raman scattering from metalloporphyrins and

hemoproteins and photographic essay of porphyrins and related macrocycles It then concludes with a chapter on high resolution Zeeman spectroscopy of metalloporphyrins This book should be useful to inorganic organic physical and biochemists interested in the physical chemistry of porphyrins

Aromatic and Heteroatomic Chemistry Volume 7
Hans SUSCHITZKY, 1979 Annotation Specialist Periodical Reports provide systematic and detailed review coverage of progress in the major areas of chemical research Written by experts in their specialist fields the series creates a unique service for the active research chemist supplying regular critical in depth accounts of progress in particular areas of chemistry For over 80 years the Royal Society of Chemistry and its predecessor the Chemical Society have been publishing reports charting developments in chemistry which originally took the form of Annual Reports However by 1967 the whole spectrum of chemistry could no longer be contained within one volume and the series Specialist Periodical Reports was born The Annual Reports themselves still existed but were divided into two and subsequently three volumes covering Inorganic Organic and Physical Chemistry For more general coverage of the highlights in chemistry they remain a must Since that time the SPR series has altered according to the fluctuating degree of activity in various fields of chemistry Some titles have remained unchanged while others have altered their emphasis along with their titles some have been combined under a new name whereas others have had to be discontinued

Aromatic and Heteroaromatic Chemistry H Suschitzky, O Meth-Cohn, 2007-10-31 Specialist Periodical Reports provide systematic and detailed review coverage of progress in the major areas of chemical research Written by experts in their specialist fields the series creates a unique service for the active research chemist supplying regular critical in depth accounts of progress in particular areas of chemistry For over 80 years the Royal Society of Chemistry and its predecessor the Chemical Society have been publishing reports charting developments in chemistry which originally took the form of Annual Reports However by 1967 the whole spectrum of chemistry could no longer be contained within one volume and the series Specialist Periodical Reports was born The Annual Reports themselves still existed but were divided into two and subsequently three volumes covering Inorganic Organic and Physical Chemistry For more general coverage of the highlights in chemistry they remain a must Since that time the SPR series has altered according to the fluctuating degree of activity in various fields of chemistry Some titles have remained unchanged while others have altered their emphasis along with their titles some have been combined under a new name whereas others have had to be discontinued

The Porphyrins V1 David Dolphin, 2012-12-02 The Porphyrins Volume I Structure and Synthesis Part A is the first in a series of seven volumes and covers topics like nomenclature purification and structural determination of porphyrins metalloporphyrins and other related compounds This volume serves to be a critical review of the topics covered and presents a complete and comprehensible discussion on the chemistry and biochemistry of porphyrins The chapters in the text tackle the history and geochemistry of porphyrins and related systems Also covered and discussed in the chapters is the synthesis of porphyrins from mono di and tetrapyrrolic intermediates The isolation and modification of porphyrins from

natural sources are also discussed Other related compounds are also included such as metallo aza and N methylporphyrins and their synthesis and properties This book is a good introduction and reference for students studying in the fields of chemistry and biochemistry The Porphyrins V7 David Dolphin,2012-12-02 The Porphyrins Volume VII Biochemistry Part B is devoted to the biochemistry of porphyrins their precursors and related compounds The book covers the structure and function of the major heme proteins and their reconstitution and metal substitution along with proteins derived from green photosynthetic bacteria This volume is organized into 11 chapters and begins with an introduction to the cytochrome oxidase paying particular attention to its isolation and characterization as well as biosynthesis The discussion then turns to the electron transfer functions of cytochromes b and c the structure of cytochrome c and the proposed structures for peroxidases catalases and chloroperoxidase The following chapters explore the biochemical mechanism and control of the catalytic function of cytochrome P 450 and associated electron transport chains metal substitution in hemoglobin and myoglobin and reconstitution experiments on various hemoproteins with particular attention to the removal of heme and reassembly into a heme protein complex along with protein folding around the heme This book will be of interest to inorganic organic physical and biochemists involved in the study of the biochemistry of porphyrins **The Porphyrins** David Dolphin,1978 *The Porphyrins: Structure and synthesis, part A-B* David Dolphin,1978 **Applications of Infrared, Raman, and Resonance Raman Spectroscopy in Biochemistry** Frank S. Parker,1983-10-01 **Carbohydrate Metabolism** Marcel Florkin,Elmer H. Stotz,2014-07-14 Comprehensive Biochemistry Volume 17 Carbohydrate Metabolism focuses on the processes reactions and transformations involved in the metabolism of carbohydrates including glycosaminoglycans enzymes oxidation and glycolysis The selection first elaborates on functional organization contributing to carbohydrate economy and control of synthesis and breakdown of glycogen starch and cellulose Discussions focus on breakdown of glycogen in mammalian systems role of glycogen in the regulation of glycogen metabolism glycogen and starch metabolism in bacteria and plants carbohydrate digestion and integration of digestion and absorption The book also ponders on regulation and mechanisms of enzymes and hexose monophosphate oxidation including functions and regulation of pentose phosphate cycle glucose transport and role of subsequent steps in regulating the rate of glycolysis The book takes a look at the metabolism of glycosaminoglycans aldonic and uronic acids and carbohydrate and oxidative metabolism in neural systems Concerns include control of carbohydrate metabolism adaptive changes in relation to carbohydrate metabolism uronic and aldonic acid metabolism in plants and microorganisms and mechanism of alternation of monosaccharide units The selection is a vital source of data for researchers interested in carbohydrate metabolism Pyrrole Pigments, Isoprenoid Compounds and Phenolic Plant Constituents Marcel Florkin,Elmer H. Stotz,2014-06-28 Comprehensive Biochemistry Volume 9 Pyrrole Pigments Isoprenoid Compounds and Phenolic Plant Constituents focuses on the organic and physical chemistry of the major organic constituents of living material This book discusses the correlations between structure and visible spectrum

theoretical interpretation of the visible absorption spectra and spectrophotometric determination of chlorophyll The quantitative aspects of hemoglobin breakdown monocyclic and bicyclic carbon systems and substances related to retinol are also elaborated This publication likewise covers the naturally occurring quinones phenolic compounds derived by linear condensation of two carbon units and single carbon incorporation into ring systems This volume is useful to biochemists and specialists researching on pyrrole pigments isoprenoid compounds and phenolic plant constituents **The Porphyrin**

Handbook, Volume 2 Karl Kadish, Kevin M. Smith, Roger Guillard, 1999-10-15 Scientists in such fields as mathematics physics chemistry biochemistry biology and medicine are currently involved in investigations of porphyrins and their numerous analogues and derivatives Porphyrins are being used as platforms for the study of theoretical principles as catalysts as drugs as electronic devices and as spectroscopic probes in biology and medicine The need for an up to date and authoritative treatise on the porphyrin system has met with universal acclaim amongst scientists and investigators **The**

Porphyrin Handbook, Volume 5 Karl Kadish, Kevin M. Smith, Roger Guillard, 1999-10-15 Scientists in such fields as mathematics physics chemistry biochemistry biology and medicine are currently involved in investigations of porphyrins and their numerous analogues and derivatives Porphyrins are being used as platforms for the study of theoretical principles as catalysts as drugs as electronic devices and as spectroscopic probes in biology and medicine The need for an up to date and authoritative treatise on the porphyrin system has met with universal acclaim amongst scientists and investigators **The**

Porphyrin Handbook, Volume 3 Karl Kadish, Kevin M. Smith, Roger Guillard, 2000 Scientists in such fields as mathematics physics chemistry biochemistry biology and medicine are currently involved in investigations of porphyrins and their numerous analogues and derivatives Porphyrins are being used as platforms for the study of theoretical principles as catalysts as drugs as electronic devices and as spectroscopic probes in biology and medicine The need for an up to date and authoritative treatise on the porphyrin system has met with universal acclaim amongst scientists and investigators

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