

Contents

Preface.....	xi
Editors.....	xiii
Contributors	xv
1 Industrial Photochemistry.....	1
<i>André M. Braun, Günther H. Peschl, and Esther Oliveros</i>	
2 Excilamp Photochemistry.....	21
<i>Thomas Oppenländer</i>	
3 Microphotochemistry: Photochemical Synthesis in Microstructured Flow Reactors	49
<i>Oksana Shvydkiv and Michael Oelgemöller</i>	
4 Photolabile Protecting Groups in Organic Synthesis.....	73
<i>Christian G. Bochet and Aurélien Blanc</i>	
5 Photochemical Key Steps in Organic Synthesis	95
<i>Norbert Hoffmann</i>	
6 Photochirogenesis	125
<i>Cheng Yang and Yoshihisa Inoue</i>	
7 Enantioselective Photoreactions in Solution.....	177
<i>Kerrie A.B. Austin and Thorsten Bach</i>	
8 Spin-Center Shift Reactions.....	201
<i>Pablo Wessig</i>	
9 Photochemistry in Ecosustainable Syntheses: Recent Advances.....	213
<i>Valentina Dichiarante and Stefano Protti</i>	
10 Solar Photochemistry from the Beginnings of Organic Photochemistry to the Solar Production of Chemicals	237
<i>Emma E. Coyle and Michael Oelgemöller</i>	
11 Photochemistry in Alternative Media	249
<i>Tadashi Mori and Yoshihisa Inoue</i>	

12	Cryogenic Matrix Photochemistry	277
	<i>Götz Bucher</i>	
13	Preparative and Mechanistic Semiconductor Photocatalysis	293
	<i>Horst Kisch and Dariusz Mitoraj</i>	
14	Radical Photochemistry	329
	<i>Uta Wille</i>	
15	Recent Advances in the Photoinduced Radical Nucleophilic Substitution Reactions	347
	<i>Maria E. Budén, Sandra E. Martín, and Roberto A. Rossi</i>	
16	Photochemistry of Aryl Halides	369
	<i>Luca Pretali and Angelo Albini</i>	
17	Photochemistry of Phosphate and Sulfonate Esters	393
	<i>Davide Ravelli and Maurizio Fagnoni</i>	
18	Stabilized Carbocations Generated by Photoheterolysis	419
	<i>Hans-Werner Abraham</i>	
19	Intermolecular Photochemical Hydrogen Abstraction: Synthetic Applications in Relation to Carbon–Carbon Bond Formation	445
	<i>Niall W.A. Geraghty and Mary Treasa Lohan</i>	
20	Inter- and Intramolecular Photocycloaddition of Aromatic Compounds	489
	<i>Hajime Maeda and Kazuhiko Mizuno</i>	
21	Di- π -Methane Rearrangement	511
	<i>Howard E. Zimmerman</i>	
22	Oxa-Di- π -Methane Rearrangement of β,γ -Unsaturated Ketones	527
	<i>V. Jayathirtha Rao and Kolupula Srinivas</i>	
23	Photochemical Bergman Cyclization and Related Photoreactions of Ene-diyne	549
	<i>Igor V. Alabugin, Wang-Yong Yang, and Runa Pal</i>	
24	Scope and Limitations of Hula-Twist Mechanism of Photoisomerization	593
	<i>Robert S.H. Liu, Yao-Peng Zhao, and Lan-Ying Yang</i>	
25	Fulgimides	607
	<i>Karola Rück-Braun, Kerstin Mayer, Andreas Hebert, and Fabian Michalik</i>	
26	Photoenolization and Its Applications	627
	<i>Petr Klán, Jakob Wirz, and Anna D. Gudmundsdottir</i>	
27	Paternò–Büchi Reaction	653
	<i>Maurizio D'Auria</i>	
28	Quinone Photochemistry	683
	<i>Helmut Görner</i>	
29	Photodecarboxylation of Arylacetic Acids	715
	<i>Matthew Lukeman</i>	

30	Photooxygenation, [2+2] and [4+2].....	727
	<i>Maria Rosaria Iesce and Flavio Cermola</i>	
31	Singlet Oxygen-Mediated Allylic Oxidation.....	765
	<i>Mariza N. Alberti and Michael Orfanopoulos</i>	
32	Photooxygenations of Sulfur Compounds.....	789
	<i>Edward L. Clennan</i>	
33	Porphycenes: Spectroscopy, Photophysics, and Tautomerism.....	809
	<i>Jacek Waluk</i>	
34	Photochemical Transformations Involving Porphyrins and Phthalocyanines.....	831
	<i>Natalia N. Sergeeva and Mathias O. Senge</i>	
35	Photochemical Routes for Metal Nanoparticle Synthesis.....	881
	<i>Katherine L. McGilvray and J.C. Scaiano</i>	
36	Photocatalytic Water Splitting.....	911
	<i>Junwang Tang and Alexander J. Cowan</i>	
37	Overview of the Development of Integrated Photocatalytic Adsorbents (IPCAs) for Water Treatment Using Titanium Dioxide (TiO ₂) and Activated Carbon.....	935
	<i>David Keane, Kieran Nolan, Anne Morrissey, Michael Oelgemöller, Shaik Basha, and John Tobin</i>	
38	Molecular Logic Based on Optical Signaling.....	963
	<i>Uwe Pischel and Joakim Andréasson</i>	
39	Application of Photophysics to the Study of Supramolecular Dynamics.....	981
	<i>Tamara C.S. Pace and Cornelia Bohne</i>	
40	Photostability of Drugs and Drug Products.....	1003
	<i>Beverley Glass</i>	
41	Computational Photochemistry and Photobiology.....	1029
	<i>Patrick Z. El-Khoury, Igor Schapiro, Mark Huntress, Federico Melaccio, Samer Gozem, Luis Manuel Frutos, and Massimo Olivucci</i>	
42	DNA Fluorescence.....	1057
	<i>Dimitra Markovitsi, Thomas Gustavsson, and Akos Banyasz</i>	
43	Action Spectroscopy: General Problems.....	1081
	<i>Edward D. Lipson</i>	
44	Action Spectroscopy: Ultraviolet Radiation.....	1093
	<i>Thomas P. Coohill and Francesco Ghetti</i>	
45	Photosensitization: Basic Principles.....	1105
	<i>Giulio Jori</i>	
46	Photoecology and Environmental Photobiology.....	1117
	<i>Donat-P. Häder</i>	

47	Photoactive Yellow Protein, the Prototype Xanthopsin	1137
	<i>Johnny Hendriks, Marijke Hospes, and Klaas J. Hellingwerf</i>	
48	Photomovements in Eukaryotic Microorganisms.....	1161
	<i>Giovanni Checcucci and Francesco Ghetti</i>	
49	Transport and Sensory Rhodopsins in Microorganisms	1173
	<i>Yuki Sudo</i>	
50	Nonvisual Photosensitivity and Circadian Vision.....	1195
	<i>Carlo Musio and Silvia Santillo</i>	
51	The Essential Role of Retinoids as Ligands for Visual Pigment Formation in and Survival of Cone Photoreceptors	1211
	<i>Peter H. Tang and Rosalie K. Crouch</i>	
52	Phytochrome: Molecular Mechanisms for Light Signaling in Plants.....	1225
	<i>Jeong-Il Kim, Yun-Jeong Han, and Pill-Soon Song</i>	
53	Blue Light Regulation in Plants and Microorganisms	1237
	<i>Aba Losi and Wolfgang Gärtner</i>	
54	Bioluminescence.....	1265
	<i>Vadim R. Viviani</i>	
55	Artificial Photosynthetic Systems	1289
	<i>Péter Maróti and Massimo Trotta</i>	
56	Fluorescent Proteins: Structural Determinants of Optical Response	1325
	<i>Ranieri Bizzarri and Riccardo Nifosi</i>	
57	Formation and Repair of UV-Induced DNA Damage.....	1349
	<i>Thierry Douki</i>	
58	The Biology of UVA Radiation	1393
	<i>Rex M. Tyrrell and Evelyne Sage</i>	
59	Ultraviolet Radiation and Vitamin D.....	1435
	<i>Lesley E. Rhodes and Ann R. Webb</i>	
60	Endogenous Antioxidant Photoprotection and Its Enhancement in Human Skin	1449
	<i>Maryam Afshar and Antony R. Young</i>	
61	Acute and Chronic Effects of Ultraviolet Radiation, Visible Light, and Infrared.....	1463
	<i>Saroj M. Verma and Gillian M. Murphy</i>	
62	Phototherapy and Photochemotherapy in Dermatology.....	1475
	<i>Piergiacomo Calzavara-Pinton, Mariachiara Arisi, Bernhard Ortel, and Mariateresa Rossi</i>	
63	Photoimmunology.....	1489
	<i>Vivienne E. Reeve</i>	

64	Photodynamic Therapy.....	1511
	<i>Clare Conway and Stanley B. Brown</i>	
65	Photodynamic Drug Delivery.....	1529
	<i>Julie Tzu-Wen Wang, Josephine H. Woodhams, Alexander J. MacRobert, Stephen G. Bown, and Kristian Berg</i>	
66	Phototoxicity of Drugs.....	1541
	<i>Virginie Lhiaubet-Vallet and Miguel Angel Miranda</i>	
67	Photodynamic Approaches to Water Disinfection.....	1557
	<i>Michela Magaraggia and Giulio Jori</i>	
Index.....		Index-1