

Photochemistry for Biomedical Applications

Yoshihiro Ito
Editor

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From Device Fabrication to Diagnosis
and Therapy

 Springer

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ISBN 978-981-13-0151-3 ISBN 978-981-13-0152-0 (eBook)
<https://doi.org/10.1007/978-981-13-0152-0>

Library of Congress Control Number: 2018939008

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The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Preface

Light plays a vital role in our daily lives, and it is an essential component of several interdisciplinary scientific fields being explored in the twenty-first century. In fact, light-based concepts have revolutionized the field of medicine, including the subject areas of oncology, molecular biology, and surgery. Moreover, light-based technology contributes to the fabrication of biomaterials and is integral to novel developments in biomedical engineering.

Although photochemistry has contributed significantly to the field of medicine directly through photo-irradiation as well as through photochemical fabrication of biomaterials, there has been a long-pending need for a comprehensive overview of recent progress in this field in the form of an informative book. This is an attempt to highlight the contributions of photochemistry in the interdisciplinary fields of chemistry and medical engineering.

The first part of the book gives a general introduction to photochemistry and related photo-technologies, while the second part discusses photochemistry-based medical applications in diagnostics (biochips and bioimaging) and therapeutics (biomaterials for artificial organs, medical adhesives, dental materials, drug-delivery systems, tissue engineering, and photodynamic therapy), exemplifying recent research.

I hope this book will prove useful to chemists who are intrigued by the medical applications of photochemistry as well as to engineers who are keen to learn the principles of photochemistry, enabling its practical applications.

I would like to thank all the contributors to this book for sharing their knowledge, especially Mr. Shinichi Koizumi for his patience in waiting for the manuscripts and to Ms. Asami Komada for her assistance in editing the book.

Wako, Japan
2017 Fall

Yoshihiro Ito

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