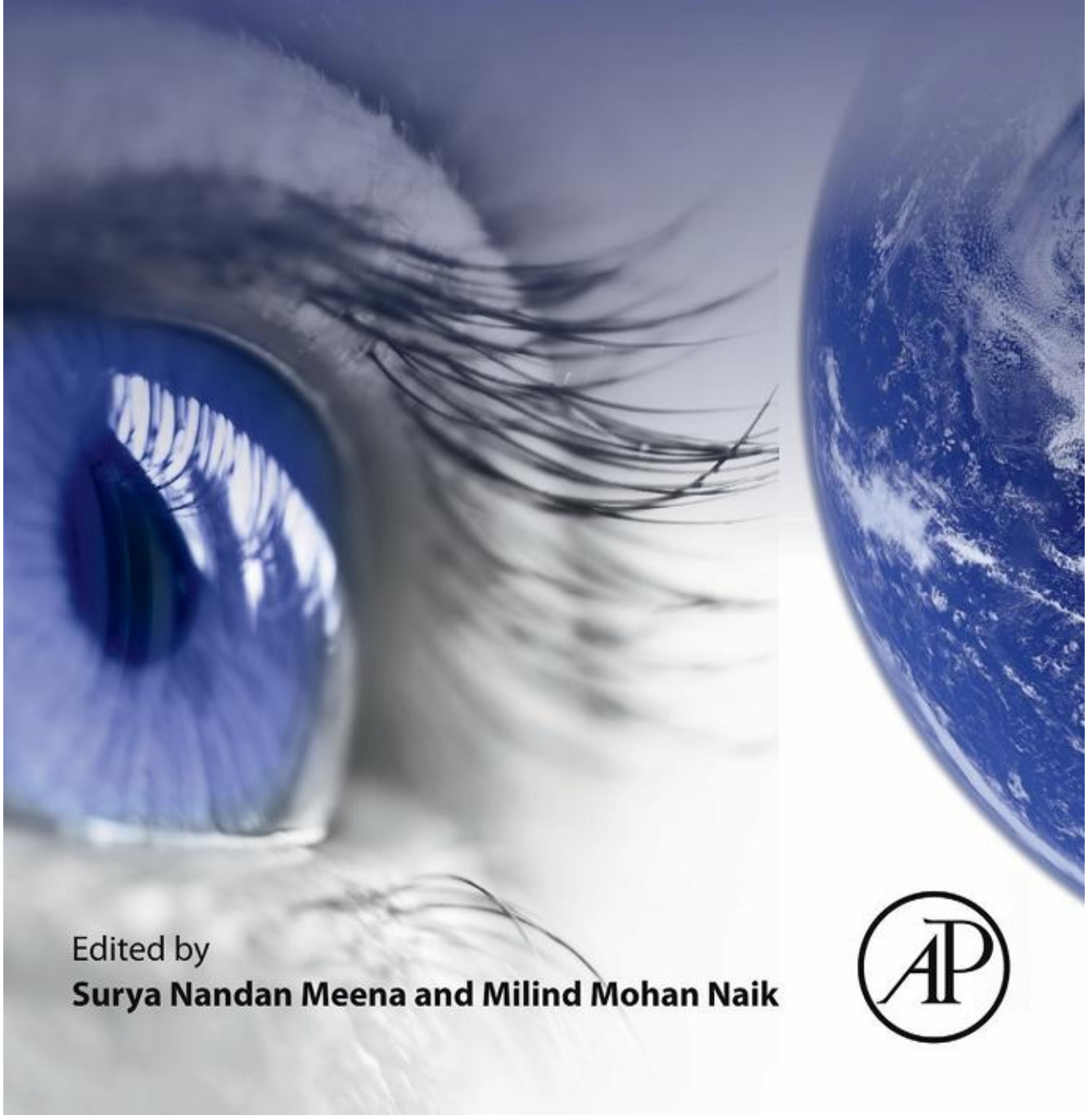
Advances in Biological Science Research

A Practical Approach



Edited by
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ACADEMIC PRESS
An imprint of Elsevier

Academic Press is an imprint of Elsevier
125 London Wall, London EC2Y 5AS, United Kingdom
525 B Street, Suite 1650, San Diego, CA 92101, United States
50 Hampshire Street, 5th Floor, Cambridge, MA 02139, United States
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom

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Library of Congress Cataloging-in-Publication Data
A catalog record for this book is available from the Library of Congress

British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library

ISBN: 978-0-12-817497-5

Publisher: Andre G. Wolff
Acquisition Editor: Linda Versteeg-buschman
Editorial Project Manager: Sandra Harron
Production Project Manager: Poulouse Joseph
Cover Designer: Vicky Pearson Esser

Typeset by TNQ Technologies

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Chapter 7

Biotechnological implications of hydrolytic enzymes from marine microbes

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7.1 Introduction

Biocatalyst and biotechnology are intervolved terms that have camouflaged almost every socioenvironmental activity of our living style in the 21st century. To date, almost 4000 enzymes are known, out of which approximately 5% of microbial original types are used commercially [1].

The marine microbial population, while still largely unexplored because of its diversities and extreme environment, is being screened with the help of high-throughput technologies such as shotgun sequencing or pyrosequencing for deeper exploration [2], resulting in the reporting of approximately 20,000 species per liter of marine water samples [3].

Microbial enzymes have proved superior over chemical catalysts and enzymes derived from plants or animals, by virtue of their versatility, stability, enantioselectivity, reduced process time, intake of low-energy input, and cost-effectiveness, besides their nontoxic and eco-friendly characteristics [4]. Competition amongst microorganisms for space and nutrients in the marine environment is a powerful selective force that has led to the generation of multifarious enzyme systems to adapt to the complicated environments. Many of them are thus endowed with desirable features, from a general biotechnological perspective. However, these features of microbes as well as enzymes can be enhanced with the help of techno-studies such as recombinant DNA/protein engineering [5].

Advances in Biological Science Research. https://doi.org/10.1016/B978-0-12-817497-5.00007-0