Sustainable Plastic Waste Management, Volume 2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Email: curran@proceedings.com
Web: www.proceedings.com



The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48n1984. | ISBN 9798331340223 (pod)

Copyright © 2026 American Chemical Society

All Rights Reserved. Reprographic copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Act is allowed for internal use only, provided that a per-chapter fee of $40.25 plus $0.75 per page is paid to the Copyright Clearance Center, Inc., 222 Rosewood Drive, Danvers, MA 01923, USA. Republication or reproduction for sale of pages in this book is permitted only under license from ACS. Direct these and other permission requests to ACS Copyright Office, Publications Division, 1155 16th Street, N.W., Washington, DC 20036.

The citation of trade names and/or names of manufacturers in this publication is not to be construed as an endorsement or as approval by ACS of the commercial products or services referenced herein; nor should the mere reference herein to any drawing, specification, chemical process, or other data be regarded as a license or as a conveyance of any right or permission to the holder, reader, or any other person or corporation, to manufacture, reproduce, use, or sell any patented invention or copyrighted work that may in any way be related thereto. Registered names, trademarks, etc., used in this publication, even without specific indication thereof, are not to be considered unprotected by law.

PRINTED IN THE UNITED STATES OF AMERICA

Contents

Preface ..... **ix**

1. **Assessment of Global Plastic Footprint and Quantifying the Carbon Credit** **1**
   Hephzi Jones, Pankaj Kumar, Poonam Jayalwal, Pankaj Pathak, and Ghanshyam Pandey

2. **Understanding the Plastic Footprint: Life Cycle Analysis and Sustainable Management Strategy** **19**
   Pabitra Mohan Mahapatra and Achyut Kumar Panda

3. **Advances in Plastic Waste Gasification with Carbon Capture and Storage for Hydrogen Production** **53**
   Gopa Nandikes, Lalit Goswami, and Guido Sonnemann

4. **Transforming Waste Plastics into Sustainable Aviation Fuel: Technologies, Challenges, and Future Prospects** **77**
   Anamika Kushwaha, Nishat Fatima, Nidhi Hans, Dheeraj Singh, Umesh Chandra Sharma, Pankaj Verma, Radha Rani, Kanchan Deoli Bahukhandi, Sushant Singh, and Yoon-E Choi

5. **Thermal Pyrolysis of Plastic Waste into Fuel** **109**
   Subhashini and Tarak Mondal

6. **The Degradation of Polyethylene Glycol by Microbial Consortia and Production of Value-Added Products for Energy** **123**
   Monu Dinesh Ojha and Sinosh Skariyachan

7. **Microbial-Assisted Degradation of Plastic and Pathways to Resource Recovery** **145**
   Dhriti Somani, Elston Fernandes, Susithra Priyadarshni Mugunthan, and Bhuvana Kamath Shanbhag

8. **Sustainable Treatment Strategies for Waste Plastics: Pathways Towards Resource Recovery and Clean Energy** **175**
   Pushpitha Chandana, MSSR Tejaswini, and Jannatun Zia

9. **Treatment of Plastics and Microplastics Present in Sewage Effluent** **207**
   Abhishek Thakur, Ajay Kumar, Harpreet Kaur, and Arush Sharma

10. **Regulatory Framework Assessment for Treatment of Plastics and Microplastics Present in Sewage Effluent** **223**
    Karan Chabhadiya, Charmi Chabhadiya, and Marzena Smol

11. **Plastic Lifecycle and Its Energy Consumption** **233**
    Qian-Qian Zhang and Guang-Guo Ying

Editors' Biographies **249**

Indexes

Author Index **253**

Subject Index **255**