Green Hydrogen Economy for Environmental Sustainability

Volume 1: Fundamentals and Feedstocks

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 9798331301927 (pod)

Copyright © 2024 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

Pre	face ix
1.	Integration of Government Policies on the Global Level for Green Hydrogen Production
	Shahrukh Nawaj Alam, Zaira Khalid, Bhaskar Singh, and Abhishek Guldhe
2.	Green Hydrogen Production: Impacts on Environmental Sustainability Scale
3.	The Future Is Green: Sustainable Hydrogen Production from Biomass Derivatives through Photocatalysis
	T P Rugma, Ajith P Varghese, K. Priyanga Kangeyan, Golda A Shiny, and Sandeep Kumar Lakhera
4.	Effect of Nanomaterials on Fermentative Production of Hydrogen Using Bacteria 83 Sarvjeet Kaur and Harpreet Kaur
5.	Sustainable Superhydrophilic Hydrogel-Based Photocatalyst for Green Hydrogen Production
	Sayantanu Mandal and Kajari Kargupta
6.	Zinc Indium Sulfide as a Sustainable Catalyst for Green Hydrogen Production
7.	Generation of Green Fuel Hydrogen through Electrocatalytic Water Splitting 147 Poulami Hota, Aranya Das, and Dilip K. Maiti
8.	A Comprehensive Study on Hydrogen Gas Production Using Renewable Energy
	Sources
9.	Decarbonization of Biomass Feedstocks with Green Hydrogen Production: Important with Processes and End-Products
10.	Biological Method for Producing Hydrogen from Lignocellulosic Biomass
11.	Waste-to-Green Hydrogen: Converting Dumpsite Waste for Environmental Sustainability in the Green Hydrogen Economy

12.	Potential Organic Waste Materials for Green Hydrogen: A Route for Environmental	
	Sustainability	249
	Anushka Garg, Soumen Basu, Shweta J. Malode, and Nagaraj P. Shetti	
13.	Sustainable Environment with Green Energy Options: Advantages and	
	Disadvantages	28 7
	Naveen Sahith Veeramalli, Sai Sruthi Vasamsetti, J Aravind Kumar, S Sathish, D Prabu, ar Krithiga	ıd T
14.	Unveiling the Green Alchemy: Waste Biomass to Hydrogen Production	305
15.	Green Hydrogen from Microalgae: Process, Recent Trends, and Policies	345
Edi	tors' Biographies	367
	Indexes	
Aut	thor Index	371
Sub	oject Index	373