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Nota di contenuto	Intro -- Series editor preface -- About the series editor -- Contents -- List of contributors -- Hydrogen: Presents Accomplishments and Far-Reaching Promises -- Forewords -- Foreword -- Foreword -- Extended Introductions -- Hydrogen: why the times to scale have come -- Hydrogen key to a carbon-free energy system -- The European hydrogen strategy -- Introduction to the hydrogen books -- Geopolitics of hydrogen -- Volume I: Hydrogen production and energy transition -- 1 An overview of today's industrial processes to make hydrogen and future developments' trend -- 2 Catalytic autothermal reforming for hydrogen production: from large-scale plant to distributed energy system -- 3 An overview of recent works on Ni silica-based catalysts for the dry reforming of methane -- 4 CO <sub>2</sub> hydrogenation by plasma-assisted catalysis for fuel production: power-to-gas application -- 5 Development perspective for green hydrogen production -- 6 Hydrogen production from biomass pyrolysis -- 7 Gasification of biomass and plastic waste -- 8 Water electrolysis as an environmentally friendly source of hydrogen -- 9 Electrolysis for coupling the production of pure hydrogen and the valorization of organic wastes --

10 Renewable power-to-hydrogen systems and sector coupling power-mobility -- 11 Photoelectrocatalytic H<sub>2</sub> production: current and future challenges -- 12 Biological water splitting -- 13 Fuel processing for fuel cells and energy-related applications -- 14 Emergent-based well-being design for a hydrogen-based community: social acceptance and societal evolution for novel hydrogen technology -- 15 Eni's projects in Italy for hydrogen production -- Conclusions and Recommendations: "The Future of Hydrogen" -- Index.

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Sommario/riassunto

Carbon neutral hydrogen technologies play a key role in preventing climate change. Maximizing production of hydrogen in a clean and efficient manner is critical to the hydrogen economy. This book describes most of the potential hydrogen processing technologies and presents the state-of-the-art and future developments of modern hydrogen technologies. Attention has been given to the theoretical aspects, thermodynamics, process calculations, and modeling approaches, new technologies and reports of multiple successful new pilot systems. The book should appeal to a broad readership and is ideal for students of materials science, chemistry, physics; for researchers, chemical- and mechanical engineering, for industrialists, policymakers, economics, safety agencies and governments.

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