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Microalgal Hydrogen Production

Achievements and Perspectives

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Synopsis

This comprehensive book highlights the key steps necessary for future exploitation of solar-light-driven hydrogen production by microalgae. The highly regarded editors bring together 46 contributors from key institutions in order to suggest and examine the most significant issues that must be resolved to achieve the goal of practical implementation, while proposing reliable methodologies and approaches to solve such issues. This 19 chapter book will be an indispensable resource for academics, undergraduate and graduate students, postgraduates and postdoctoral scholars, energy scientists, bio/chemical engineers, and policy makers working across the field of biohydrogen and bioenergy.

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Brief Contents

- Comprehensive overview of photosynthetic, biohydrogen-producing microalgae and cyanobacteria: direct and indirect processes
- Fe-Fe hydrogenases: theory, structure-function, physiology, and O₂-resistance
- Sustaining hydrogen production: genetics, metabolism, rate limitations, nutrients, and regulation
- Engineering improved hydrogen production in microalgae and cyanobacteria, electron transport, ferredoxin, and environmental factors
- In vitro hydrogen production and synthetic systems
- Actual and potential light conversion efficiencies, antennae mutants, and immobilization approaches
- Photobioreactors: first attempts at their use outdoors, materials solutions, mitigation/contamination issues, and photobiological hydrogen production
- Life Cycle Assessment (LCA) studies of photobiological H₂ production

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