



# Advanced Biomass Gasification: New Concepts for Efficiency Increase and Product Flexibility

*Steffen Heidenreich, Michael Müller, Pier Ugo Foscolo*

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*Advanced Biomass Gasification: New Concepts for Efficiency Increase and Product Flexibility* provides a thorough overview on new concepts in biomass gasification and consolidated information on advances for process integration and combination, which could otherwise only be gained by reading a high number of journal publications.

Heidenreich, Müller and Foscolo, highly respected experts in this field, start their exploration with the compact UNIQUE reactor, gasification and pyrolysis, gasification and combustion, and catalysts and membranes. The authors then examine biomass pre-treatment processes, taking into account the energy balance of the overall conversion process, and look into oxygen-steam gasification and solutions for air separation, including new options for integration of O<sub>2</sub>-membranes into the gasifier. Several polygeneration strategies are covered, including combined heat and power (CHP) production with synthetic natural gas (SNG), biofuels and hydrogen, and new cutting-edge concepts, such as plasma gasification, supercritical water gasification, and catalytic gasification, which allows for insights on the future technological outlook of the area.

This book is then a valuable resource for industry and academia-based researchers, as well as graduate students in the energy and chemical sectors with interest in biomass gasification, especially in areas of power engineering, bioenergy, chemical engineering, and catalysis.

- Explores state-of-the-art technologies that allow for greater efficiency and flexibility in gasification, including process integration, combination, and polygeneration strategies
- Consolidates information that was, up until now, scattered among several sources, including journal articles
- Provides a valuable resource for industry and academia-based researchers, as well as graduate students in the energy and chemical sectors with interest in biomass gasification, especially in areas of power engineering, bioenergy, chemical engineering, and catalysis

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