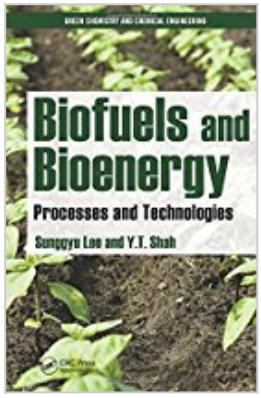

Biofuels and Bioenergy: Processes and Technologies (Green Chemistry and Chemical Engineering)

By Sunggyu Lee, Y.T. Shah

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The newest addition to the *Green Chemistry and Chemical Engineering* series from CRC Press, **Biofuels and Bioenergy: Processes and Technologies** provides a succinct but in-depth introduction to methods of development and use of biofuels and bioenergy. The book illustrates their great appeal as tools for solving the economic and environmental challenges associated with achieving energy sustainability and independence through the use of clean, renewable alternative energy. Taking a process engineering approach rooted in the fuel and petrochemical fields, this book masterfully integrates coverage of current conventional processes and emerging techniques.

Topics covered include:

- Characterization and analysis of biofuels
- Process economics
- Chemistry of process conversion
- Process engineering and design and associated environmental technologies
- Energy balances and efficiencies
- Reactor designs and process configurations
- Energy materials and process equipment
- Integration with other conventional fossil fuel processes
- Byproduct utilization
- Governmental regulations and policies and global trends

After an overview of the subject, the book discusses crop oils, biodiesel, and algae fuels. It examines ethanol from corn and from lignocelluloses and then explores fast pyrolysis and gasification of biomass. Discussing the future of biofuel production, it also describes the conversion of waste to biofuels, bioproducts, and bioenergy and concludes with a discussion of mixed feedstock. Written for readers with college-level backgrounds in chemistry, biology, physics, and engineering, this reference explores the science and technology involved in developing biofuels and bioenergy. It addresses the application of these and other disciplines, covering key issues of special interest to fuel process engineers, fuel scientists, and energy technologists, among others.

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Editorial Review

Review

"This book fulfills a long needed review of bio-mass conversion to supply the needs of the energy and fuels sector of our society. The current state of the conversion of bio-mass to energy and fuels is covered in a comprehensive way. Requirements for future process developments to ensure economic viability are clearly stated."
?David G. Retzioff, Department of Chemical Engineering, University of Missouri, Columbia, USA

"… a valuable addition to the bioenergy literature. It outlines the essentials in biofuels and bioenergy processing with authority and clarity. It is an excellent read!"
?Khaled A.M. Gasem, School of Chemical Engineering, Oklahoma State University, Stillwater, USA

About the Author

Sunggyu Lee is Russ Ohio Research Scholar in Coal Syngas Utilization and Professor of Chemical and Biomolecular Engineering at Ohio University, where he is also the Director of the Sustainable Energy and Advanced Materials (SEAM) Laboratory. Dr. Lee holds 32 U.S. patents and has authored over 450 journal articles and conference papers. He has authored and edited 15 books in the fields of chemical, energy, and materials processing. His research specialty areas include alternative fuels, syngas conversion, supercritical fluid technology, chemical process engineering and reactor design, and polymer synthesis and processing.

Dr. Y.T. Shah received his bachelor degree in Chemical Engineering at University of Michigan and Master and Sc.D degrees in Chemical Engineering at M.I.T. During more than 40 years of academic career, he has served as department head of Chemical Engineering, Dean of Engineering and Provost in more than five different institutions. Currently he is a professor of engineering at Norfolk State University, Virginia, USA. Dr. Shah’s research interests are in chemical reaction and reactor engineering, particularly as applied to energy and environmental topics. He is an author of three books, about 50 refereed chapters or review articles, and more than 200 refereed journal publications. He has been a consultant to numerous industrial and governmental organizations, particularly in the area of synthetic fuels.

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