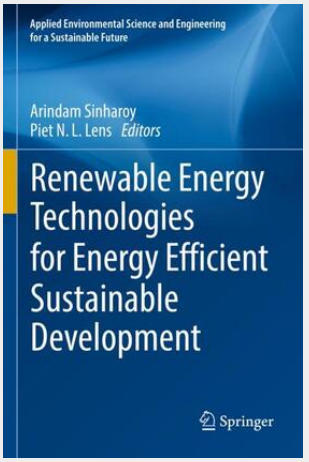
Lens / Sinharoy

Renewable Energy Technologies for Energy Efficient Sustainable Development



The depletion of fossil fuel reserves and concerns for environmental degradation due to the fossil fuel burning have led the scientific community to look for alternative renewable energy sources. Among the available renewable energy sources, bioenergy derived from biomass and waste resources have great potential to not only prevent environmental pollution but also be a carbon neutral energy source. In addition, adaptation of this technology could streamline new green products, alternative energy sources into real-world applications and promote a circular economy towards zero-waste approach. This book tries to bridge the existing knowledge gap in the area of bioenergy resources. The first two chapters provide introduction to the anaerobic digestion (AD) technologies and direct interspecies electron transfer in AD. The next three chapters are on biomass pretreatment technologies for process improvement. The sixth to eighth chapter discuses biogas and other by-product production from specific wastes such from dairy, food and agricultural solid waste. The following two chapters focuses on the downstream processing of anaerobic digestate and on biochar production. Integration of AD in biorefineries using bioelectrochemical systems, syngas fermentation and electricity production are discussed in the next three chapters. The final two chapters elaborates on life cycle assessment of AD based technologies.

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