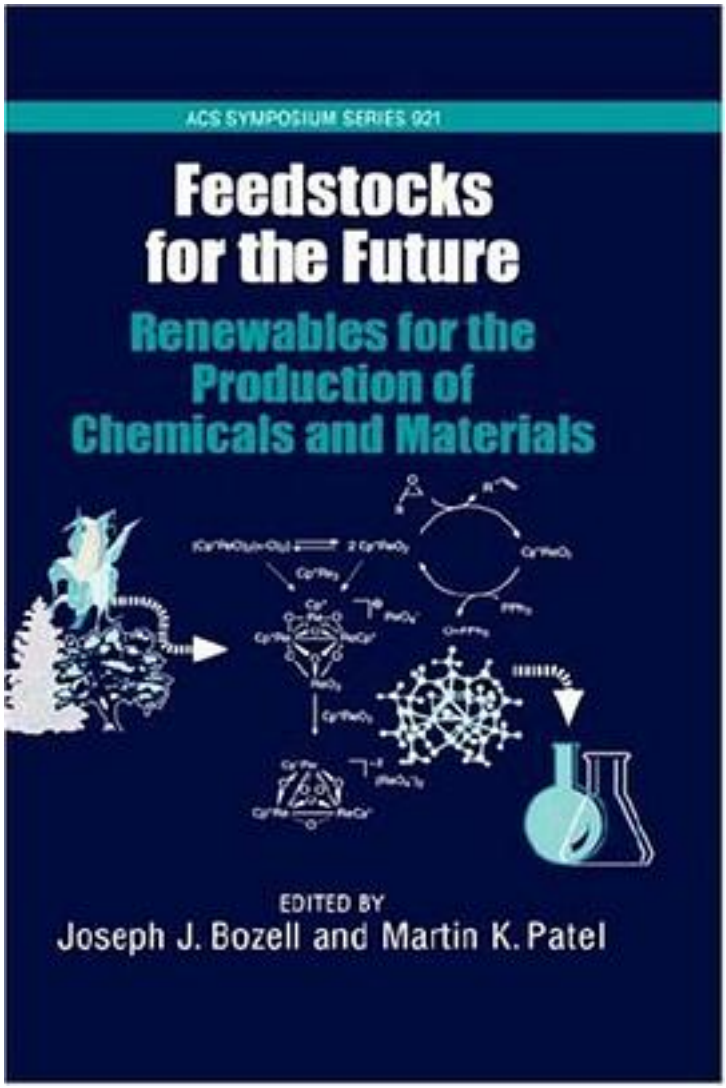
Feedstocks for the Future



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著者:Bozell, Joseph J. (EDT)/ Patel, Martin K. (EDT)

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Today's petrochemical industry is an amazing model of production efficiency, taking crude oil and supplying thousands of discrete chemicals and materials from just seven primary building blocks. Renewable raw materials offer a new set of primary building blocks including carbohydrates in the form of cellulose, starch, homicellulose, and monomeric sugars, aromatics in the form of lignin, hydrocarbons in the form of fatty acids and polyols in the form of glycerol. Yet chemical production today is overwhelmingly dominated by crude oil, principally because conversion technology for renewables still lags far behind that available for nonrenewables. Technology is needed that will lead to renewables based chemical processes that rival or exceed the diversity and efficiency of today's chemical industry. The cellulose and Renewable Materials division (CELL) of American Chemical Society offered a forum for this topic Feedstocks for the Future: Renewables for the production of Chemical and Materials, at the national ACS meeting in Anaheim, CA, March 28-April 1, 2004. This symposium included discussions of emerging conversion technologies for renewable building blocks, new mechanistic understanding of these conversion processes, development of new catalytic processes tailored for renewables, life cycle and process analysis for renewables, and identification of new structures that could serve as platforms for renewables-based product families. The book is intended to have a strong emphasis on organic chemistry, mechanism, and structure, and novel synthesis and production of chemicals, polymers and materials. More specifically, the reader will find information in the following areas: 1) new transformations of carbohydrates to chemicals and polymers 2) novel oleochemical processes; new uses of glycerol and fatty acids 3) transition metal catalyzed transformations of carbohydrates, lignin, fatty acids, glycerol, etc. 4) economic, environmental, and life cycle analysis of chemicals derived from renewables 5) production of new polymeric materials from renewables 6) new biocatalytic transformations of renewable building blocks 7) industrialuses of renewables and renewables based building blocks

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