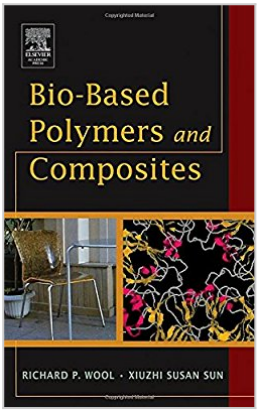

Bio-Based Polymers and Composites

By Richard Wool Ph.D. Materials Science & Eng. University of Utah 1974, Xiuzhi Susan Sun Ph.D. Agr. & Bio. Engineering University of Illinois Urbana IL 1993

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Bio-Based Polymers and Composites is the first book systematically describing the green engineering, chemistry and manufacture of biobased polymers and composites derived from plants.

This book gives a thorough introduction to bio-based material resources, availability, sustainability, biobased polymer formation, extraction and refining technologies, and the need for integrated research and multi-disciplinary working teams. It provides an in-depth description of adhesives, resins, plastics, and composites derived from plant oils, proteins, starches, and natural fibers in terms of structures, properties, manufacturing, and product performance. This is an excellent book for scientists, engineers, graduate students and industrial researchers in the field of bio-based materials.

* First book describing the utilization of crops to make high performance plastics, adhesives, and composites
* Interdisciplinary approach to the subject, integrating genetic engineering, plant science, food science, chemistry, physics, nano-technology, and composite manufacturing.
* Explains how to make green materials at low cost from soyoil, proteins, starch, natural fibers, recycled newspapers, chicken feathers and waste agricultural by-products.

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Editorial Review

Review
"The book addresses the cost-effective use of many common crop plants to make high performance engineered materials." - Newark Post

"A "Green" book that will be a tremendous resource to polymer scientists and engineers, material scientists, and agricultural practitioners." J.E.Mark, Dept of Chemistry and the Polymer Research Center, University of Cincinnati, 2005

About the Author
Richard Wool is a Professor of Chemical Engineering, former Director of the Center for Composite Materials and current Director of the ACRES (Affordable Composites from Renewable Resources) Program at the University of Delaware, where he teaches graduate courses in green engineering and bio-based materials. He has a Ph.D. in Materials Science and Engineering from the University of Utah. Besides “Bio-Based Polymers and Composites” he is the author of “Polymer Interfaces: Structure and Strength”. Professor Wool is a Fellow of the American Physical Society, Division of Polymer Physics and the Chairman of the Gordon Research Conference on Composites. His research interests are in materials from renewable resources, green chemistry and engineering, fracture and rheology. He received the Affordable Green Chemistry Award from the American Chemical Society in 2011.

Xiuzhi Susan Sun is Distinguished Professor in the Department of Grain Science and Industry at Kansas State University and is Director of the Bio-Materials & Technology Laboratory and the Center For Biobased Polymers By Design (CBPD). She received her Ph.D. in Biological & Agriculture Engineering (1993) from the University of Illinois at Urbana-Champaign, and did her postdoctoral training at Texas A&M University. She specializes in biological materials science and engineering, focusing on utilization of renewable plant materials for industrial products, especially for bio-based adhesive, resins, composites, and structured protein polymers. Her research interests also include thermal and rheological behavior, and structure and functional properties of plant-related polymeric materials and ingredients. She is the author of 100+ peer-reviewed journal articles and patents and is the Associate Editor of the Journal of Cereal Chemistry. Dr. Sun regularly participates in national strategic research planning workshops and program review panels in bio-based materials and bioenergy for the USDA, DOE, EPA, and NSF.

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