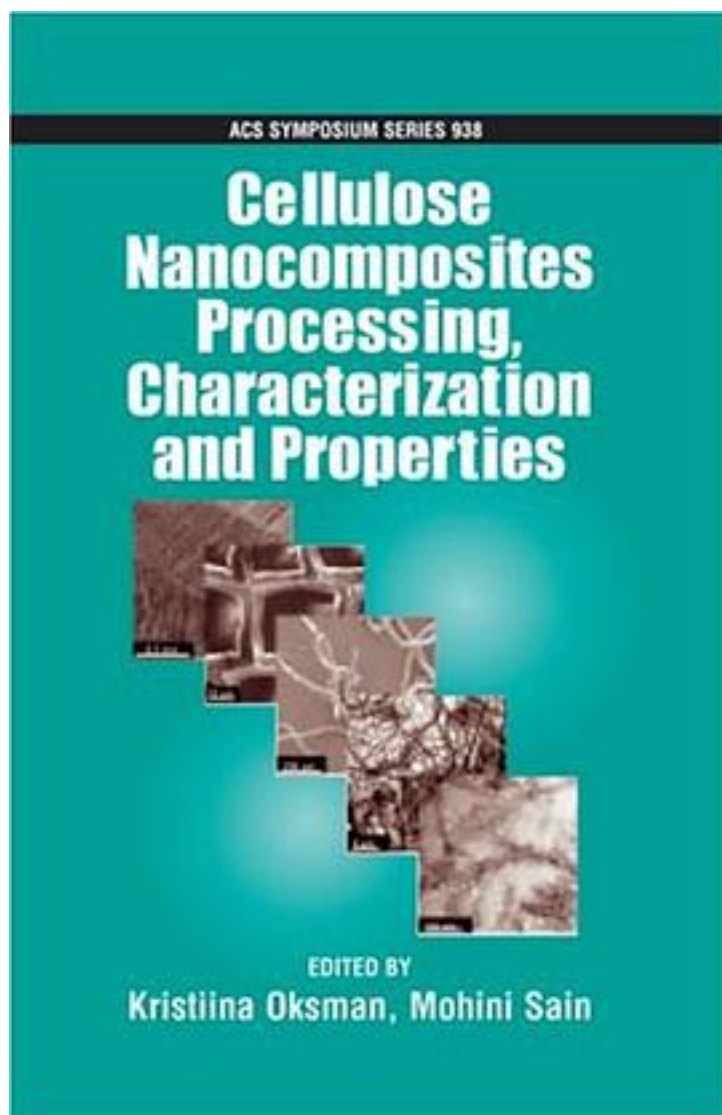


# Cellulose Nanocomposites



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The book will deal with new nanostructured composites, where both the reinforcement and the matrix are bio based. Cellulose combined with natural polymers led to the development of a new class of biodegradable and environmental friendly bionanocomposites. This new family of nanocomposites is expected to have remarkable improvement of material properties when compared with the matrix polymers or conventional micro- and macro-composite materials. Such improvements in properties typically include a higher modulus and strength, improved barrier properties, increased heat distortion temperature. This new class of renewable nanocomposites is expected to capture new market in transportation, medical and packaging applications. This book will include the raw materials which can be used for making these composites, separation/isolation technologies of cellulose based reinforcements from diverse natural resources and it will also include a brief overview of the recent advancements in the surface chemistry of nanocellulose. Characterization methods such as atomic force microscope (AFM), transmission electron microscope (TEM) and scanning electron microscope (SEM), Raman Spectroscopy, for the nano scale cellulose reinforcements and for the bio-nanocomposites will be discussed. Further, different processing methods for nanocomposites and their mechanical, thermal properties, barrier properties will be included. This will be the first book on the topic of cellulose based Nanocomposites! This is a relatively new research field and there are no books available on this topic. There is a growing interest on biopolymer based nanocomposites in developed and developing world (Japan, USA, Europe, China, South Africa, Australia) and especially if the nanocomposites are based totally on renewable raw materials. We can see several ongoing research projects on this topic in Europe and North America, and there is an emerging research trend for developing micro-and nano-fibre reinforced biopolymers.

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