

Abstract Submitted
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Synchrotron SAXS and WAXD Studies of Cellulose Nascent Crystals: Experiment and Structure Analysis YING SU, CHRISTIAN BURGER, BENJAMIN S. HSIAO, BENJAMIN CHU, Stony Brook University, STONY BROOK UNIVERSITY TEAM — Cellulose nascent crystals extracted from biomass (wood pulp, jute and cotton) by combined chemical and mechanical treatments are low cost, environmentally friendly and high performance materials to form the barrier layer in ultrafiltration membranes. This research project is aimed at using the synchrotron X-ray scattering methods to characterize the nascent crystalline nanofibers in different formats. The SAXS (Small Angle X-ray Scattering) data of cellulose nanofiber suspensions was analyzed and the polydisperse ribbon model with rectangular cross section fit the data well. The 2D and 3D simulations of WAXD (Wide Angle X-ray Diffraction) pattern of jute cellulose fibers solved the contents ratio of cellulose I-alpha and I-beta and Hermans' orientation parameter P2.

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