

## **International Journal of Polymer Analysis and Characterization Extraction and Characterization of Natural Cellulose Fibers from Maize Tassel**

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### **Abstract**

This article reports on the extraction and characterization of novel natural cellulose fibers obtained from the maize (tassel) plant. Cellulose was extracted from the agricultural residue (waste biomaterial) of maize tassel. The maize tassel fibers were obtained after treatment with NaOH and were carefully characterized while the chemical composition was determined. The chemical composition of the maize tassel fibers showed that the cellulose content increased from 41% to 56%, following alkali treatment. FT-IR spectroscopic analysis of maize tassel fibers confirmed that this chemical treatment also shows the way to partial elimination of hemicelluloses and lignin from the structure of the maize tassel fibers. X-ray diffraction results indicated that this process resulted in enhanced crystallinity of the maize tassel fibers. The thermal properties of the maize tassel fibers were studied by the TGA technique and were found to have improved significantly. The degradation temperature of the alkali-treated maize tassel fiber is higher than that of the untreated maize tassel fibers. This value convincingly showed the potential of maize tassel fibers for use in reinforced biocomposites and waste water treatment.