

# Extraction of nanocellulose fibrils from lignocellulosic fibres: A novel approach

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## Abstract

The objective of this work was to develop a simple process to obtain an aqueous stable colloid suspension of cellulose nano fibrils from various lignocellulosic fibres. For the preliminary analysis we have studied three different fibres: banana (pseudo stem), jute (stem) and pineapple leaf fibre (PALF). To study the feasibility of extracting cellulose from these raw fibres we have adopted steam explosion technique along with mild chemical treatment. These processes included usual chemical procedures such as alkaline extraction, bleaching, and acid hydrolysis but with a very mild concentration of the chemicals. The chemical constituents of the fibre in each processing step were determined by ASTM standard procedures. Morphological, spectroscopic and thermal analyses of the fibres were carried out and found that the isolation of cellulose nanofibres occurs in the final step of the processing stage and they possess improved thermal stability for various advanced nanotechnological applications.

**Keywords:** Natural fibres; Steam explosion; Extraction; Nanocellulose