Electronic Supplementary Material (ESI) for Nanoscale Advances.

Preparation of cellulose nanocrystal (CNCs) reinforced polylactic acid (PLA) bionanocomposites filaments using biobased additives for 3D printing applications

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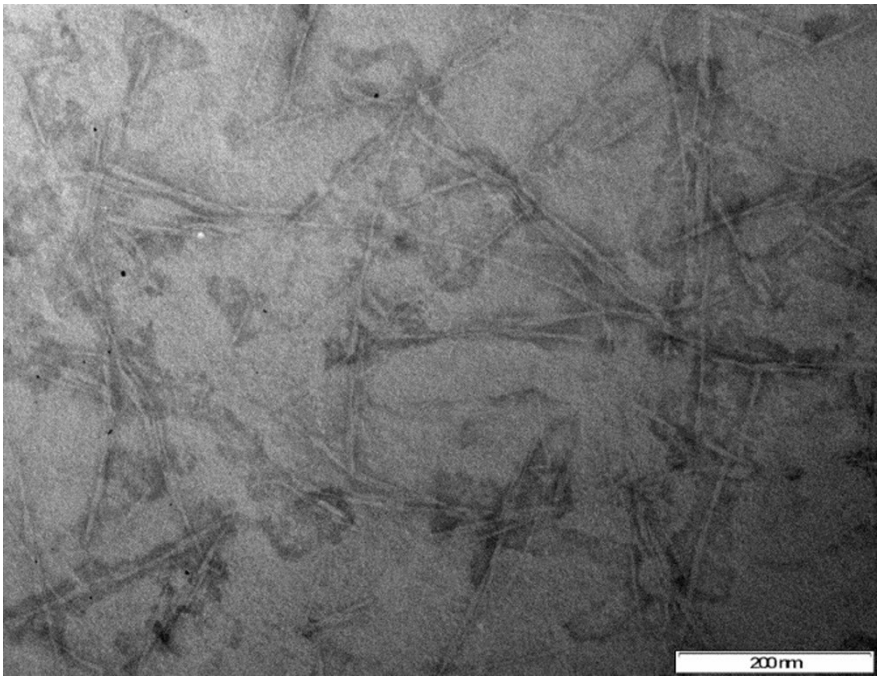
Supplementary information:

The freeze-dried cellulose nanocrystals (CNCs) used in this current study were extracted on a pilot scale from sawdust of Eucalyptus grandis, using a propriety technology developed by the Biorefinery Industry Development Facility (BIDF), Natural Resources and the Environment Research Area, Council for Scientific and Industrial Research (CSIR), Durban, South Africa. The transmission electron microscopy (TEM) image of the CNCs has been provided by the supplier and is presented in the supplementary information. According to the CNCs supplier, Transmission electron microscopy (TEM) was performed using a JOEL 2100 TEM operated at 200 kV accelerating voltage. A CNCs suspension diluted with water to 0.01% w/v was deposited on a carbon grid, stained with 2% of uranyl acetate and allowed to dry at room temperature prior to imaging. The average CNCs length was measured as ~259 nm and the width was ~5.81 nm.



Supplementary Figure 1: Transmission electron microscopy (TEM) image of CNCs extracted from sawdust of Eucalyptus grandis softwood. (**TEM Image adapted from the CNCs supplier)**