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Abstract

UTILIZATION OF SURFACE-MODIFIED NANOCELLULOSE DERIVED FROM OFFICE WASTE FOR THE TREATMENT OF WASTEWATER

Water pollution is a significant challenge because water is essential for the survival of all living organisms. Nanocellulose biopolymers present a promising and environmentally friendly approach to addressing wastewater treatment issues. This study investigates the use of cellulose nanomaterials from office waste to treat wastewater from the textile industry. Initially, cellulose nanocrystals (CNC) were extracted through acid hydrolysis from recycled paper that had gone through a deinking process. The obtained CNCs were then chemically modified by using a Fischer esterification process with citric acid to introduce multiple carboxyl groups. The modified nanomaterial was characterized, and its potential as a surface modifier was assessed to determine its effectiveness as a flocculating agent for removing cationic dyes from synthetic wastewater samples.

Keywords: cellulose, nanomaterials, wastewater

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