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Synthesis and Characterization of Crosslinked Cellulose Schiff base as a Novel Bio Based Polymer Ligand

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Cellulose is recognized as the most abundant biopolymer in nature offer wide chance to be used for superior applications such as water purification [1,2]. It is natural, renewable, environmentally friendly, efficient and cost-effective, sustainable, bio–degradable and derived also easily from plant sources [3]. In this context, fully biobased and crosslinked adsorbent polymer Schiff base was prepared by using oxidation reaction of extracted cellulose biopolymer. A safe crosslinked cellulose dialdehyde (CCDA) was synthesized through epichlorohydrin and sodium metaperiodate ($NaIO_4$) followed by Schiff base formation with p-phenylenediamine [Fig. 1]. Crosslinking, oxidation and Schiff base formation of the extracted cellulose was confirmed by using FTIR spectrum. The index bonds of crosslinked cellulose (CC), CCDA and the crosslinked cellulose Schiff base (CCSch) were appeared at about 3419, 1727 and 1607 cm^{-1} respectively. The prepared imine bands and microstructure of the synthesized product was investigated from EDS and SEM analyses.

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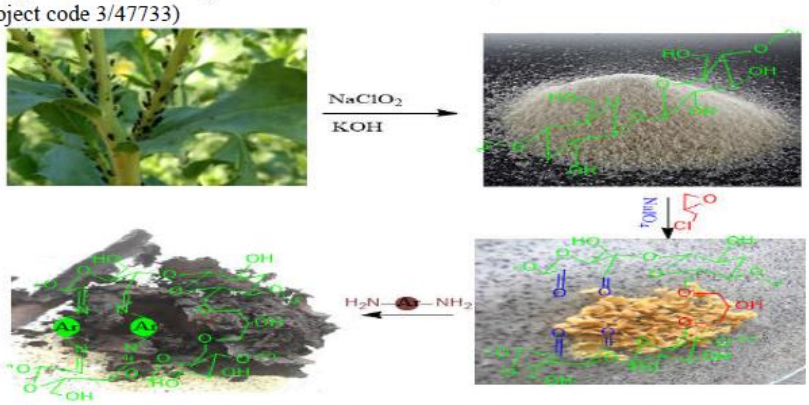

Fig. 1 Scheme of green polymer Schiff base preparation process

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