

Indicator-Immobilized, Cellulose Based Optical Sensing Membrane for the Detection of Heavy Metal Ions

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Abstract : The synthesis of cellulose nanofibrils quaternized with 3-chloro-2-hydroxypropyltrimethylammonium chloride (CHPTAC) in NaOH/urea aqueous solution has been reported. Xylenol Orange (XO) has been used as an indicator for selective detection of Sn (II) ions, by its immobilization on quaternized cellulose membrane. The effects of pH, reagent concentration and reaction time on the immobilization of XO have also been studied. The linear response, limit of detection, and interference of other metal ions have also been studied and no significant interference has been observed. The optical chemical sensor displayed good durability and short response time with negligible leaching of the reagent.

Keywords : cellulose, chemical sensor, heavy metal ions, indicator immobilization

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