

Synthesis and Characterization of Cellulose Acetate-Hydroxyapatite Micro and Nano Composites Membranes for Water Purification and Biomedical Applications

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Abstract

In this work, we report facile synthesis and characterization of new cellulose acetate-hydroxyapatite membranes for water purification and biomedical applications. The membranes were synthesized from a polymer solution in N, N'-dimethylformamide (12% wt.) where different concentrations of hydroxyapatite (1, 2, 4% wt. based on the amount of polymer) were dispersed using sonication. The synthesis of membranes was carried out by precipitation employing phase inversion using deionized water. The morphological and structural characterization of the synthesized membranes was carried out using SEM, EDS and FT-IR. Thermal characterization (TGA & DTG) and water flows analysis of the synthesized membranes was also carried out. The SEM analysis confirmed the presence of hydroxyapatite micro/nanostructured particles in the membrane as well as significant changes in the morphology of the membranes surface. The presence of inorganic compounds was also found to influence the thermal or hydrodynamic properties of the composite membranes,

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