



Electrochemical behaviour of the membranes based on GO/ZrP nanocomposite

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Abstract:

In the present study, GO doped ZrP composite cation exchange membranes were prepared by solution casting technique, using PVC as binder. Sonication was employed to achieve better homogeneity and electrochemical properties of the membrane matrix. The synthesized GO-ZrP membranes were characterized by X-ray diffraction, scanning electron microscopy (SEM) and transmission electron microscopy (TEM). Water content and ion exchange capacity were found to increase initially with increase in concentration of GO up to 0.2 wt% and then decreased with further increase in concentration of GO. The electrochemical properties of prepared membranes like membrane potential, transport number, fixed charge density, permeability and ionic flux were explored. The fabricated membranes exhibited higher membrane potential, transport number and fixed charge density for monovalent ions (NaCl) than those for bivalent ions (BaCl₂). These membranes exhibited lower permeability and ionic flux for bivalent ions as compared to those for monovalent ions. The conductivity measurements for both monovalent and bivalent ions were performed on the nanocomposite membranes, and it was noticed that the conductivity of the membranes was higher for monovalent ions.

Biography:

Sandeep Kaushal completed Ph.D from Punjab Technical University, Jalandhar on Synthesis, Characterization and Applications of Zirconium Based Inorganic Ion Exchangers in the year 2016. He previously taught chemistry in RIMT-IET, Mandigobindgarh and in Doaba Polytechnic College, Raipur.



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