POLYMERIC MEMBRANE WITH COMPLEXING PROPERTIES APPLIED FOR CHROMIUM REMOVAL

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Abstract –

It is well known that industrial wastewater may contain a numerous of toxic substances which can harm seriousely healthy of human beings. Chromium element pose often this kind of problem when it is present in aqueous media. In this purposes, our work was devoted to the synthesis of inclusion polymeric membrane containing functional groups allowing selective elements separation.
Five polymeric membranes were prepared using solvant evaporation method, these materials contain various compositions of several compound (Cellulose TriAcetate (CTA), polycaprolactone (PCL), Polyvinylpyrolidone (PVP), Polyanetholsulfonic acid (PATSA)). In addition, NPOE or D2EHPA were used as plasticizers, and then, polymeric thin films with a smooth surface were obtained.
It was demonstrated that, membrane synthetized with respectively PVP and PATSA in the presence of D2EHPA exhibit a good performance by fixing 24.5 % and 41.6 % of chromium, respectively. This is probably due to the acidic character of D2EHPA used in these membranes and its synergistic role within the both polymer. These results confirm also the affinity between D2EHPA and (Cr (VI)) caused by the presence of the phosphoric acid function and increased by chelating properties of nitrogen or oxygen atoms of the polymers.

Keywords - Membrane Separation, Chromium Removal, Complexation