Removal of Chromium from Water using Modified Polyethylene Membrane

Abstract

This work records the formation of polyethylene membranes from waste polyethylene bags for future application in water filtration. The membranes were made via the thermally induced phase separation technique, where waste polyethylene (PE) was immersed in xylene with PEG-400 as an extra and stirred at 120 °C. The solution was cast on polished glass sheets to create films, accompanied by water–ethanol therapy and stock as membranes. This feasible and renewable attitude shows an actual route way for recycling waste plastics into practical alteration stuff. The membranes were examined for their shape and features utilizing Fourier Transform Infrared Spectroscopy, and Scanning Electron Microscopy which assisted studies their chemical bonds, surface structure, elemental shape, and density. Filtration trials were then brought out to test how better the membranes could adsorb and filter chromium under distinct environments. The outcomes expressed that polyethylene (PE) membranes attained good eliminating proficiency because of their porosity, surface features and ability for farther advancements. Final, the analysis shows that polyethylene -focused membranes can be a little-price and environmentally-friendly choice for filtering wastewater polluted with chromium, with chances for later huge-scale utilizations.

Keywords: Water pollution; Chromium; PE membrane; Thermal induced phase separation