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## Efficient facilitated transport of lead and cadmium across a plasticized triacetate membrane mediated by organo-phosphorous carrier

This paper reports on the synthesis of a novel class of polymer inclusion membranes prepared by thermally induced phase separation using a mixture of two polymers: polyvinylidene fluoride (PVDF) and cellulose triacetate (CTA) plasticized by dioctylphthalate (DOP) doped with organo-phosphoric compound: trioctyl phosphine oxide noted (TOPO) as mobile carrier. The membranes Polymers - Plasticizer - Carrier were characterized using chemical techniques as well as Fourier Transform Infra - Red (FTIR), X-ray Diffraction (XRD), and Thermogravimetric Analysis (TGA). All synthesized polymeric membranes are applied for investigation to the facilitated transport of Pb(II) and Cd(II) ions from aqueous nitrate source phase. The PVDF and PVDF + CTA membranes presented a homogeneous and dense structure while the PVDF + CTA + DOP and PVDF + CTA + DOP + TOPO membranes obtained a well distributed porous structure. All membranes were thermally stable up to nearly 200°C. A study of the transport across a polymer inclusion membrane has shown that the lead or cadmium transport efficiency was increased using TOPO as carrier at pH 6-7. This study represents an interesting approach in the treatment of hydrometallurgical solutions using the TOPO neutral carrier mediated transport.

### Preferred topic

Polymers and environment

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