Studies of organic-inorganicnano composite ion-exchanger: Poly (o-toluidine)/Zirconium(IV)tungstoiodophosphate

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Abstract : Nano composite material is growing very rapidly. This is because of using building blocks with the dimension in the nano size range makes it possible to design and create new materials. Nano composites are a special class of materials originating from suitable combination of two or more nano particles in some suitable technique, Organic polymeric part of the composite provide mechanical and chemical stability where as inorganic part support the ion – exchange behaviour, thermal stability and also increase the electrical conductivity. Thus, the synthesis of polymeric/inorganic composites has received a great deal of attention because it provided new materials with special mechanical, chemical, electrochemical and optical as well as magnetic properties. Few such excellent ion – exchange materials have been developed and successfully being used in chromatographic techniques. It was therefore considered to synthesize such hybrid ion–exchangers with a good ion–exchange capacity, high stability, reproducibility and selectivity for heavy metal ions, indicating that they are useful in environmental applications. An organic-inorganic nano composite ion-exchanger, poly(o-toluidine)/Zr(IV) tungstoiodo phosphate was prepared by sol-gel mixing of poly(o-toluidine) into the matrices of inorganic precipitate of Zr(IV)tungstoiodophosphate. The ion-exchange capacity ,effect of eluent concentration, elution behaviour, pH and effect of time on ion exchange capacity were also carried out by using standard procedures.

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