

NR/PEO Block Copolymer: A Chelating Exchanger for Metal Ions

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Abstract : In order to utilize the natural rubber for developing new green polymeric materials for specialty applications, we have prepared natural rubber and polyethylene oxide based polymeric networks by two shot method. The polymeric networks thus formed have been used as chelating exchanger for metal ion binding. Chelating exchangers are, in general, coordinating copolymers containing one or more electron donor atoms such as N, S, O, and P that can form coordinate bonds with metals. Hydrogels are water-swollen network of hydrophilic homopolymer or copolymers. They acquire a great interest due to the facility of the incorporation of different chelating groups into the polymeric networks. Such polymeric hydrogels are promising materials in the field of hydrometallurgical applications and water purification due to their chemical stability. The current study discusses the swelling response of the polymeric networks as a function of time, temperature, pH and [NaCl] and sorption studies. Equilibrium swelling has been observed to depend on both structural aspects of the polymers and environmental factors. Metal ion sorption shows that these polymeric networks can be used for removal, separation, and enrichment of metal ions from aqueous solutions and can play an important role for environmental remediation of municipal and industrial wastewater.

Keywords : block copolymer, adsorption, chelating exchanger, swelling study, polymer, metal complexes

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