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Sorption of Iodine on Ion Exchange Resins

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Sorption of iodine on ion exchange resins
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One of the most important applications of radiation in the field of chemistry is the modification of polymeric species for the purpose of separation and purification of radioactive species is radiation induced graft polymerization (RIGP) and Emulsion polymerization both in which various factors affect the polymerization process most important of which is the radiation dose. The monomer Glycidyl methacrylate has been polymerized by Radiation induced graft polymerization on polyethylene tubes with optimum solvent concentration, radiation dose, radiation time, and also GMA has been polymerized by radiation emulsion polymerization influenced by the irradiation dose rate and the type of emulsifier namely TWEEN 80 in this study. The GMA is a significant monomer due to the presence of the epoxy group which can further modified for purpose of ion exchange.
Ion exchange is the optimum technique for treatment of radioactive wastes and or purification of produced radioactive isotopes especially for medicinal uses, so the development of lost cost ion exchange resins that are capable of adsorbing ions in interest from high volumes of effluent on the least amount of adsorbent with high adsorption capacity and low amount of solid waste.
Radioactive isotope production facilities have been established all around the world for manufacturing of radioisotopes for pharmatheutical uses either by neutron activation or by fission of uranium as molybdenum 99, Technicium 99m and iodine 131.

`The PolyGMA prepared by both techniques was modified using triethyl amine for embedding with tertiary amir`

Scanning electron microscope and EDX image of Poly GMA in iodide form

Conclusion:

The poly GMA prepared by TWENN 80 so no adsorption for radioactive iodine, while the poly GMA prepared by radiation induced graft polymerization on polyethylene tubes showed adsorption of about 30% which was verified with infra red and scanning electron microscope and EDX all resins obeyed the pseudo second order rate of reaction indicating chemical sorption of iodide ions, and obeyed Langmiur and Freundlich equations.

Country/Organization invited to participate

Egypt

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