

### Solid-liquid extraction of Gd(III) from chloride medium using ion-exchange resins

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The demand for rare-earths in the international markets increases with increasing developments in the advanced technologies. A newly developed alloy containing Gd plays a significant role in magnetic refrigeration; In the present paper, we report the solid-liquid extraction of gadolinium ions from chloride medium using commercially available organo phosphorus based resins. The resins employed were T-PAR resin, a phosphoric acid resin and Tulsion CH-96, a macroporous bifunctional phosphinic acid resin. The parameters investigated are effect of equilibration time, effect of aqueous phase acidity, effect of mass of resin and effect of metal concentration. It was observed that 2 h and 6 h are sufficient to reach equilibrium for T-PAR resin and Tulsion CH-96 resins, respectively. The extraction of Gd using T-PAR and Tulsion CH-96 was found to be pH dependent. The percent extraction of Gd increases with increase in pH using both the resins. The extraction of Gd increases from 32.6 at 0.05 g to 95.9 at 2.0 g with T-PAR resin and from 16.0 at 0.05 g to 94.7 at 2.0 g with Tulsion CH-96 resins as expected.