



Purification of Yttrium Using Iminodiacetic Acid Resin

Benjamin V. Kronholm and Corby G. Anderson

Summary: A method to separate yttrium from heavy rare earth mixtures

Description: Commercially available chelating ion-exchange resins were applied to the separation of a mixture of heavy rare earths. Separation coefficients of several rare earths were calculated based on their degree of adsorption in batch isotherm experiments. Yttrium (Y) showed particularly high separation coefficients compared to samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), and dysprosium (Dy), which made up the balance of the mixture processed. In the treatment of heavy rare earth feed from a known process stream, yttrium was found to behave similarly to non-ionic components in ion-exclusion chromatography. This approach could be used to purify yttrium from a mixed solution of “heavy” rare earths without the use of specialized eluents.

Potential Areas of Application

- Upgrading a yttrium rich mixture
- Separation of yttrium from a mixed rare earth stream.

Main Advantages of this Invention

- Stage efficiency of ion exchange is retained without the complexity of existing ion exchange techniques
- Takes advantage of the strong selectivity of the iminodiacetic acid functional group with respect to Yttrium.

Intellectual Property Status: US utility patent pending (application #14/562,430)

ID number: 14015

Opportunity: We are seeking an exclusive or non-exclusive licensee for implementation of this technology.

For more information contact:

William Vaughan, Director of Technology Transfer
Colorado School of Mines, 1500 Illinois Street, Guggenheim Hall Suite 314, Golden, CO 80401
Phone: 303-384-2555; e-mail: wvaughan@mines.edu