

SEPARAÇÃO de elementos terras raras por  
cromatografia de troca iônica de 2<sup>da</sup> ordem

ON EXCHANGE CHROMATOGRAPHIC SEPARATION OF RARE EARTH  
ELEMENTS IN GEOLOGICAL SAMPLES

em amostras  
geológicas

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ABSTRACT

The determination of rare earth elements in complex matrixes, such as geological samples, requires their preliminary separation from other interfering elements. Added to this, some methods of determination at low concentration levels are prone to matrix and inter-lanthanide interferences. In such cases the separation of the elements into individual or sub-groups of heavy, medium and light rare earths is essential.

In the present work, an ion exchange method was employed for the separation of total rare earth elements, the resin used being cationic and the eluents used were HCl and HNO<sub>3</sub>. In order to improve the efficiency in the separation of individual or sub-groups of rare earth elements in cationic resin, an organic complexing agent  $\alpha$ -hydroxy isobutyric acid was employed. The ammonium salt of this complexing agent ( $\alpha$ -HIBA) is well known and is adequate for the chemical separation of the rare earths. Thus, in the second stage, the rare earth elements were separated into individual fractions of La, Ce, Nd and sub-groups of Sm-Eu-Gd and Yb-Er-Dy, utilizing the same resin and  $\alpha$ -HIBA as eluting agent.

The nine elements La, Ce, Nd, Sm, Eu, Gd, Dy, Er and Yb were separated by this method in United States Geological Survey (USGS) rock standards GSP-1, AGV-1, G-2 and PCC-1. This separation scheme was employed in the determination of rare earth elements by mass spectrometric isotope dilution method and the results obtained demonstrated efficiency of the separation procedure.

5<sup>o</sup> Encontro Nac. Química Analítica,  
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