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SEPARATION OF LEAD IN ROCK SAMPLES BY ION EXCHANGE METHOD

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ABSTRACT

With a view of developing analytical methods to be employed in the preparation of rock samples to be dated by Pb-Pb isotope method, two different methods of separation of lead, from other constituents of the rock, were tested. Both the methods involved rock dissolution by acid digestion using highly concentrated acids.

In the first method of separation, a quartz column of 8mm internal diameter and 80mm height of anionic resin AG1-X8 was employed. This column was conditioned with 1M HCl, 0,01M HCl and 1M HCl in that order. Later the sample (previously treated) was dissolved in 1M HCl and loaded on to the column. Then 30ml of 1M HCl was passed through the column; this elutes all elements other than lead and lead is then eluted with 10ml of 0,01M HCl.

In the second method, a column of 5mm internal diameter was filled with anionic resin AG1-X8 up to a height of 70mm. The column was conditioned with water and 1M HBr. The sample was dissolved in 1M HBr and passed through the column and later 3ml of 1M HBr was passed to remove interfering elements. The lead was eluted with 4ml of 6M HCl; the purification process is repeated three times.

The purified lead fraction was analysed by mass spectrometry and the results showed that the second method was more efficient, as the thermoionic emission of lead obtained during the analyses was better and the isotope ratios measured for these samples were more precise and accurate.

5^o Encontro Nac. Química Analítica,
Salvador, 1-6 set., 1989