Flow injection spectrophotometric determination of europium using chlortetracycline

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Source: TALANTA Volume: 59 Issue: 1 Pages: 9-18 Article Number: PII S0039-9140(02)00443-5 DOI: 10.1016/S0039-9140(02)00443-5 Published: JAN 2 2003

Abstract: A flow injection (FI) spectrophotometric determination of europium (III) is described, based on the complexation between europium (III), and chlortetracycline (CTC) in a Tris-buffer pH 8.0 medium. The resulting yellow-coloured complex is measured at its absorption maximum of 400 nm after 100 μl of sample or standard solution containing europium. (III) are injected into the merged streams of CTC and Tris-buffer solutions. Optimum conditions for determining mug amounts of europium (III) are achieved by univariate method. Various types of reactors are also investigated. It is shown that the use of a single bead string reactor gives rise to the enhancement of peak height. A linear calibration curve over the range of 0.10-0.60 μg ml(−1) europium (III) is established with the regression equation (n = 6) Y = 34.93X +0.01 and the correlation coefficient of 0.9994 is obtained. A detection limit (3sigma) of 0.01 μg ml(−1) of europium (III) and the relative standard deviation (R.S.D.) of 4.32% for determining 1.0 μg ml(−1) of europium (III) (n = 7) are obtained. The recommended method has been applied to the quantitation of europium (III) in spiked water and stream sediment samples with average recoveries of 99.9 and 97.5%, respectively. The sampling rate is found to be 85 h(−1). (C) 2002 Elsevier Science B.V. All rights reserved.

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