

Chemical characteristics of strong acid cation exchange filter and application of quantitative analysis of cations by XRF

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The strong acid cation exchange filter, CP-1, were applied to X-ray fluorescence (XRF) for trace elements in aqueous solution. In this study, the objective elements were Cu, Zn, Pb, and Cd.

First, chemical properties of the CP-1 filter were experimentally found by the column methods and the batch experiments. The CP-1 filter has total ion-exchange capacity of 16 mg per unit. The distribution coefficients were obtained for Na, Ba, Cu, Zn, Pb, Cd and Al.

Next, the measurement of the X-ray intensity determined the optimum methods of XRF analyses using the CP-1 filter. The optimum area that sample solutions penetrated was inside the determining area. The proper material to underlay CP-1 filter was glass bead. The calibration curves that determined by this study calculated the limit values of determination. These values were 0.72 micro gram for Cu and Zn.

The method of separation and concentration using the CP-1 filter enable the quantitative analyses of trace heavy metals easily.