

automated Chemical Analysis System for Salts and Seawater Using FIA System: Determination of Trace Manganese in Various Salts by Catalytic Photometric Detection

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Summary

Two flow-injection(FIA) systems for the determination of trace manganese in salts are presented using highly sensitive catalytic detection based on the oxidation of 3,4-dihydroxybenzoic acid by hydrogen peroxide. Two different approaches, the use of a large sample volume injection in a usual FIA mode(system A) and on-line coupling of a cation-exchange separation column with the detection in a continuous flow system(system B), have proved very effective for eliminating the blank peak problem and thus affording direct injection of a sample solution containing a large concentration of salts. The limits of determinations are 0.04 ppm and 0.01 ppm for systems A and B, respectively, when a 5 g sample is used for preparing the 100 ml sample solution. The proposed FIA systems were satisfactorily applied to the determination of manganese at 0.03-1.59 ppm in solar salts with good precision.