

Continuous flow system(FIA) for on-site analysis and continuous monitoring for dissolved constituents in sea water

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Summary

A new continuous flow system for nitrite and nitrate nitrogen determination in sea water is presented as a prototype tool which is applicable to on-site analysis and/or continuous monitoring. In order to achieve highly sensitive and rapid detection of nitrite, nitrite-catalyzed oxidation of chlorpromazine with hydrogen peroxide in acetic acid medium was employed which was directly in-line coupled with spectrophotometric detection at 528 nm in a continuous flow system. No complicated manual operation was needed and glass apparatus such as beaker, flask, and pipets usually required for analysis was omitted because most analytical operations were done automatically in a narrow bore tubing system. Those must be important requirements for realizing on-site analysis. Under the optimum conditions established, a linear calibration graph was obtained in the range 0~120 ppb nitrite. The relative standard deviation was 0.9% for 50 ppb nitrite and the limit of detection was 0.3ppb (S/N=3). Only about 90sec is needed for analysis of one sample. The photo-chemical reduction of nitrate to nitrite in a continuous flow system was also described.