ON-LINE GAS-DIFFUSION FLOW INJECTION DETERMINATION OF MERCURY AND ARSENIC IN COMPLEX AQUEOUS SAMPLES

Spas D Kolev

School of Chemistry, The University of Melbourne, Victoria 3010, Australia

Gas-diffusion flow injection analysers, employing hydrophobic membranes, have been frequently used in the online determination of predominantly non-metallic organic or inorganic analytes (e.g. phenols, alcohols, cyanide, carbonate, sulfide and ammonium) in complex samples. The present paper describes the development of several gas-diffusion flow injection methods for the on-line determination of mercury(II) and arsenic(III) in samples containing suspended particular matter, macromolecules and coloured compounds. Mercury(II) was reduced with tin(II) chloride in the donor stream of the flow systems used to metallic mercury, which was then partially transported as vapour across a Teflon membrane into the acceptor stream for detection. Arsenic(III) was transferred across a Teflon membrane to the acceptor stream of the flow injection analysers as arsine after reduction with sodium borohydride. Spectrophotometric, electrochemical or chemiluminescence detection was used in the analysers mentioned above. The on-line methods outlined above were applied successfully to ‘dirty’ environmental and industrial samples.