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Flow injection is now a widely used tool in the analytical laboratory for sample presentation to a range of optical and electrochemical detectors (Ruzicka & Hansen 1988; Valcarcel & Luque de Castro 1987). In addition to this basic but none the less important function, it provides a means to perform on-line physical and chemical treatment of the sample. Physical techniques such as dialysis and solvent extraction can significantly improve the total analysis time by minimizing off-line manual operations (Worsfold 1988). Chemical techniques can improve both selectivity and sensitivity and in this regard incorporation of solid phase reactors is particularly important, e.g. immobilized enzymes and antibodies and oxidation and reduction columns can be used to chemically modify the sample and ion-exchange resins and solid adsorbents can be used to preconcentrate the analyte or remove matrix interferences (Worsfold 1988).

The rapid and reproducible mixing of sample and reagent that can be achieved by flow injection makes it an ideal tool for quantitative chemiluminescence and bioluminescence measurements. In such processes the emission is directly related to the rate of reaction and therefore is not only immediate and transient but also greatly dependent on the mixing process. The excellent sensitivity of chemiluminescence detection is well known but, in addition, selectivity can be incorporated by using immobilized enzymes or by coupling the flow-injection system with liquid chromatography.

With an appropriate sample interface, flow injection is also highly compatible with liquid process streams and there will be considerable developments in its application to chemical process monitoring in the future. In addition to the demands of selectivity, sensitivity, accuracy and precision that must be met by laboratory methods, process monitoring introduces requirements such as unattended operation, autocalibration, sample presentation, data transfer and rugged and reliable instrumentation, all of which can be achieved by flow injection.

Specific examples were shown of the attractive features of flow injection mentioned above, including monitoring of enzyme activities (Worsfold *et al.* 1990), use of microemulsions (Memon & Worsfold 1986), novel chemiluminescence reactions (Lancaster *et al.* 1989), immobilized bioluminescent enzymes (Worsfold & Nabi 1986) and water quality monitoring (Clinch *et al.* 1987).

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