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Potentiometric Chip-based Multipumping Flow System for the Simultaneous Determination of Fluoride, Chloride, pH, and Redox potential in Water Samples.

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Abstract

A simple potentiometric chip-based multipumping flow system (MPFS) has been developed for the simultaneous determination of fluoride, chloride, pH, and redox potential in water samples. The proposed system was developed by using a poly(methyl methacrylate) chip microfluidic-conductor using the advantages of flow techniques with potentiometric detection. For this purpose, an automatic system has been designed and built by optimizing the variables involved in the process, such as: pH, ionic strength, stirring and sample volume. This system was applied successfully to water samples getting a versatile system with an analysis frequency of 12 samples per hour. Good correlation between chloride and fluoride concentration measured with ISE and ionic chromatography technique suggests satisfactory reliability of the system.

Graphical abstract

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