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New trends in sample miniaturization and its applications: On-chip devices

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Sample preparation miniaturization is one of the latest trends in analytical chemistry. The development of new sample preparation procedures is closely linked to the new on-chip microfluidic devices. These microchips have proven to offer new advantages over traditional methodologies, such as a decrease of the reagent volume, organic solvent and sample volume. It also reduces the analysis time and offers very high extraction efficiencies when working under double flow conditions or good enrichment factors when working under stationary conditions. These microchips systems have been employed using two different extraction techniques: liquid phase microextraction and electromembrane. The parameters that affect both extractions are the composition of the sample and the acceptor phase, the flow of the acceptor and donor phase, the organic solvent used as a liquid membrane supported and the extraction time. The voltage is one of the extra parameters to be determined in the case of the electromembrane. However, one of the most influential variables is related to the geometry of these microchips systems, since depending on their length, width and depth, different extraction and enrichment efficiencies will be obtained. In this work, new trends in the geometric study of microfluidic devices and their application to both environmental and biological samples are presented.

Biography

Maria Ramos Payan has completed her Ph.D. from University of Seville, Spain and postdoctoral studies from University of Copenhagen (Denmark), University of North Carolina (USA) and Microelectronic National Center of Barcelona (Spain). She is the leader of the microfluidic research line. She has published more than 30 papers in reputed journals and has been serving as an editorial board member of repute.

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