

Planar Microstructures for Electrophoresis

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Quantitative on-line surveillance of a chemical compound is usually based on sampling, sample pre-treatment, including separation of mixtures, detection and interpretation of the obtained results. If all these steps are performed automatically in flowing streams, it is called a Total Analysis System (TAS). Several different types of TAS have been constructed and used for such surveillance tasks. Disadvantages of TAS for liquid samples include slow transport of a sample from the point of sampling to the location of the detection, slow separation processes, poor efficiencies of rapid separations and large consumption of fluids. Miniaturization with respect to the above mentioned criteria leads to a so called Miniaturized Total Analysis System (μ -TAS).

The recent developments in micromachining and microsystem technology influenced the modern analytical chemistry especially by chemical sensors, chemical micro reactors, and precise fluid handling. A spectacular work published in 1975/79 by Steve Terry on integration of a gas chromatograph on a silicon wafer unfortunately has not attracted sufficient attention then. Since several years, we have investigated the possibilities and characteristics of microstructures used for capillary electrophoresis [1] – [3], for synchronized cyclic capillary electrophoresis [4] and for free-flow electrophoresis [5].

References

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