Analytical chemistry

The use of microfluidic systems in modern analytical chemistry

Marcel Abound [1] Novoselova Yulia [2], Rak Elena [3]

[1] *Department of analytical chemistry*

[2] *Department of electrochemistry*

[3] *Department of solid state chemistry*

One of the important directions of development of modern analytical chemistry is the miniaturization of devices and means of chemical analysis. The capacity to carry out laboratory operations on a small scale using mircofluidics systems is very appealing. Small scale reduces the required time to synthesize and to analyze a product, as greater control of molecular interactions is achieved at the microscale level. In addition, reagent cost and the amount of chemical waste can be very much reduced [1].

Now, at the beginning of this century, it is clear that lab-on-a-chip approach is starting to be considered as a potential analytical tool in many application fields as one of the application of microfluidic system [2].

The term LOC (although synonymous with "micro total analysis system" μTAS) gives a more appropriate idea of the laboratory on a chip, as these miniaturized systems are used for not only analysis of the samples, but also synthesis of compounds and biochemical studies of cells and microorganisms [3]. These microchips use microfluidic systems to automate standard laboratory processes and to conduct chemical and biochemical processes in a miniaturized format [1].

The report will be considered the application of the microfluidics system in the modern analytical chemistry in both qualitative and quantitative analysis.

1. Ángel Ríos, Mohammed Zougagh, Modern qualitative analysis by miniaturized and microfluidic systems, Trends Anal. Chem., Rev., 69, **(2015)**, 105-113. IF 7.29
2. A. Escarpa, Lights and shadows on food microfluidics, Lab Chip 14 **(2014)** 3213–3224.

IF 6.115

3. A. Ríos, M. Zougagh, Sample preparation for micro total analytical systems (μ-TASs), Trends Anal. Chem. 43 **(2013)** 174–188. IF 6.27