

# Tentative Outline

**Special Issue for Current Analytical Chemistry**

***“Automation in Sample Preparation and Green analytical perspectives”***

**Guest Editors:** Prof. (Dr.) Victoria Samanidou, and Prof. (Dr.) Aristidis Anthemidis

## **Aims & Scopes:**

Sample preparation is the most challenging step of the analytical procedure, affecting the whole analytical process in the analytical laboratory. It usually involves several steps, which are considered to be time-consuming, tedious and laborious and normally consume a huge amount of toxic organic solvents.

Green microextraction techniques have advantages over classical techniques (LLE or SPE) including utilization of less solvents and minimal sample number and size, reduction of the sample treatment steps, reduction in consumption of hazardous reagents and energy maximizing at the same time the safety for operators and the environment, and generation of less waste. Green microextraction techniques are user-friendly tools for analytical scientists and at the same time less harming for the environment and provide a less complicated and straightforward approach in analysis.

In this context, miniaturization of classical LLE and SPE techniques has led to new microextraction methodologies such as single-drop microextraction (SDME), dispersive liquid-liquid microextraction (DLLME),  $\mu$ -SPE (micro-Solid Phase Extraction), MSPE (magnetic solid phase extraction), DSPE (dispersive solid phase extraction) with extreme reduction of extraction solvent volume.

The future perspectives for green microextraction techniques depend on the incorporation of even less toxic solvents, the development of new sorbent materials, further miniaturization, full automation and on-line coupling capability with analytical instruments.

The demand for rapid, repeatable and reliable results as well as the need for routine analysis of numerous samples has driven to online automatic operations thanks to flow injection analysis (FIA), sequential injection analysis (SIA) and related techniques.

Current trends in analytical chemistry, are mainly focused on three significant objectives namely miniaturization, simplification, and automation. During recent years, noteworthy progress has been made in order to enhance the quality of analytical results and follow the concept of green analytical chemistry. The implementation of flow-based sample pretreatment methodologies used for fluidic manipulation and on-line sample/reagent pretreatment holds many advantages in contrast with the batch mode of sample preparation. These include low consumption of solvents and reagents and thus low cost of total analysis as well as a significant improvement of the repeatability of the extraction procedure.

## **Subtopics:**

The subtopics to be covered within this issue are listed below:

- **Green analytical methods based on automation and miniaturization**
- **On-line sample pretreatment methodologies**
- **On-line microextraction techniques for separation and/or preconcentration**
- **On-line chromatographic separations**
- **Future perspectives in automated techniques for sample manipulation**

## **Schedule:**

- Manuscript Submission November 11, 2018
- Peer Review Due: December 31, 2018
- Revision Due: January 30, 2019
- Final Manuscript Due: February 28, 2019
- Notification of Acceptance by the Guest Editor: March 31, 2019

**Contacts:**

**Guest Editors:** Prof. (Dr.) Victoria Samanidou, and Prof. (Dr.) Aristidis Anthemidis

**Affiliation:** *Department of Chemistry, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece*

**Emails:**

**Prof. (Dr.) Victoria Samanidou:** [samanidu@chem.auth.gr](mailto:samanidu@chem.auth.gr)

**Prof. (Dr.) Aristidis Anthemidis:** [anthemid@chem.auth.gr](mailto:anthemid@chem.auth.gr)