

Miniaturization in Analytical Chemistry

Prof. Andrzej Przyjazny

Department of Chemistry & Biochemistry, Kettering University, Flint, Michigan, USA

Miniaturization is rapidly growing in many different areas of science and technology. Like other fields, analytical systems have been affected by this new technology. *Micro total analysis systems* (μ TAS), also called *lab-on-a-chip*, have renewed interest in scaling laws in the last 20-25 years. There is no doubt that miniaturized chemical analysis systems have a tremendous potential. For instance, it is anticipated that such devices will allow the study and analysis of complex cellular processes, facilitate the development of new diagnostic tools that could revolutionize medicine, and have applications in environmental monitoring, food analysis and industry.

Some miniaturized analytical systems, such as capillary gas chromatography, micro liquid chromatography and micro capillary electrophoresis – which can be considered as intermediate levels of miniaturization – have been used in routine analyses of complex samples.

Course Outline

- Miniaturization in analytical chemistry – Introduction
- Tools for the design of miniaturized analytical systems
- Automation and miniaturization of sample preparation
- Miniaturized systems for analytical separations based on a hydrodynamic flow
- Miniaturized systems for analytical separations based on electroosmotic flow
- Detection in miniaturized analytical systems
- Miniaturization of the entire analytical process I: Micro- and nanosensors
- Miniaturization of the entire analytical process II: Micro total analysis systems (μ TAS)
- Portability of miniaturized analytical systems
- Analytical performance of miniaturized analytical systems

Termin	Dzień tygodnia	Godzina	Miejsce
07.10.2019	Poniedziałek	11.15 – 14.00	Minicentrum Konferencyjne WCH
08.10.2019	Wtorek	11.15 – 14.00	Minicentrum Konferencyjne WCH
09.10.2019	Środa	11.15 – 14.00	Minicentrum Konferencyjne WCH
10.10.2019	Czwartek	11.15 – 14.00	Minicentrum Konferencyjne WCH
11.10.2019	Piątek	11.15 – 14.00	Minicentrum Konferencyjne WCH