RECENT TRENDS IN SAMPLE PREPARATION

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Abstract:

Sample preparation is necessary to isolate the desired components from complex matrices, because most analytical instruments cannot handle the matrix directly. Recent trends in sample preparation include miniaturization, automation, high-throughput performance, on-line coupling with analytical instruments and reduction in solvent volume and time. This lectures will review recent advances in sample preparation techniques for forensic, clinical, environmental and pharmaceutical analysis, with special focus on modern extraction and related new techniques.
Main focus will be paid on widely used techniques for extraction of semivolatile organics from liquids: micro liquid–liquid extraction (mLLE), solid-phase extraction (SPE), solid-phase microextraction (SPME). stir bar sorptive extraction (SBSE), QuEChERS. In case of solid samples the following techniques will be presented: accelerated solvent extraction (ASE), supercritical fluid extraction (SFE), microwave and ultrasounds assisted extractions (MAE and UAE).
To understand any extraction technique it is first necessary to discuss some underlying principles that govern all extraction procedures. Besides, the following features, which are important in carrying out an efficient sample preparation will be highlighted: sample loss, coexisting components, problems occurring during chromatographic analysis, speed and costs of the procedure.
Current trends, except miniaturization, automation, include also reduction of solvent consumption. These trends can be combined under the label of “green chemistry”. Therefore, examples will be given showing how classical sample preparation methods can be replaced by on-site sampling, sample preparation and even analysis. Also sample volumes can be dramatically reduced when state-of-the-art separation and mass spectroscopic detection methods are used. Especially the use of on-line extraction and analysis is here important.
After lectures students should have an overview on the present state-of-the-art of modern sample preparation techniques used in laboratories, be able to compare them in term of applicability, time and solvent consumptions, easy of performance and their main pros and cons.

Termin	Dzień tygodnia	Godzina	Miejsce
11.02.2022	**Piątek**	**11.15 – 14.00**	**Audytorium 1.4**
18.02.2022	**Piątek**	**11.15 – 14.00**	**Audytorium 1.4**
25.02.2022	**Piątek**	**11.15 – 14.00**	**webinarium**
04.03.2022	**Piątek**	**11.15 – 14.00**	**Audytorium 1.4**
11.03.2022	**Piątek**	**11.15 – 14.00**	**Audytorium 1.4**