Level: Specialist academic studies of chemistry

Course title: Analytical voltammetry (advanced course)

Status: elective

ECTS: 15

Requirements: none

Learning objectives

Providing insight into the direction of development of analytical voltammetry. Introducing students to learn about new electrode material/electrodes and about their characterization. Introducing students to select specific methods of analytical voltammetry and to apply those to solving complex analytical problems.

Learning outcomes

Mastering the necessary knowledge which will enable students to understand and solve concrete problems in modern analytical voltammetry.

Syllabus

Theoretical instruction

Detailed theoretical background for voltammetric measurements. Specifics of functioning of voltammetric instrumentation. Modern electrode materials and development of new electrodes. Practical aspects of pre-treatments of electrodes and electrode modifications. Physical characterization of electrode materials and electrodes. Enhancement of the sensitivity of voltammetric measurements. Electrochemical detectors as parts of complex analytical systems. Selected complex examples of the application of analytical voltammetry. The directions of development of analytical voltammetry.

Practical instruction

Comparing the performance of different voltammetric techniques for the characterization and determination of metal ions and selected organic molecules. Performance comparison of new electrode materials for the characterization and determination of metal ions and selected organic molecules. Characterization of electrode materials and electrodes. Voltammetric determination in the presence of a complex matrix. Applications of electrochemical detectors in flow systems.

Weekly teaching load				Other:
Lectures: 5	Exercises: /	Other forms of teaching: /	Student research: 5	/