UNIVERSITY OF PANNONIA

SUBJECT DATASHEET

Semester:	2009/10/2
Subject:	Modern methods of chromatography
Code:	VEMKKAV143K
Responsible department:	Department of Analytical Chemistry
Responsible department code:	MKKA
Responsible lecturer:	dr. Péter Hajós

Educational objectives:

An understanding of the principles and applications of modern analytical separation methods

Detailed content of the subject:

1. Classification of Analytical Separation Methods. Basic Concepts and Relationships. Thermodynamics of Chromatographic Retention. 2. Plate Theory and Efficiency in Chromatography. Control of Separation. 3. Liquid Column Chromatography (adsorption, partition, ion-exchange, normal- and reversed phase systems). High Performance Liquid Chromatography, 2DHPLC 4. Ion-, Ion Pair- and Ion Exclusion Chromatography. Ion-Exchange Chromatography of Amino Acids and Carboxylic Acids. 5. Ligand-Exchange, Extraction and Perfusion Methods. Chiral Separations. 6. Gel Chromatography, Affinity Chromatography. 7. Thin-Layer Chromatography. Supercritical Fluid Chromatography. 8. Gas Chromatography (gas/liquid, gas/solid), GC-GC 9. Hyphenated Methods in Gas-, Liquid- and Electro Chromatography (GC-MS, HPLC-MS, GC-FTIR, CE-MS). 10. Electro-Chromatography (zone electrophoresis, isoelectric focusing, capillary electrophoresis, micellar electrokinetic capillary chromatography). 11. Preconcentration of Samples. Matrix-elimination. Sample Handling by Solid Phase Extraction. 12. Lab on a chip Technology. Microfluid devices. 13. Selecting and Developing of the Methods. Strategy for Separations. Optimation. 14. Instrumentation (mobile-phase delivery system, analytical columns, detection, injection, valves) 15. Applications. International Literature of Chromatography.

Requirements:

Required and suggested references:

D. A. Skoog, J. J. Leary: Principles of Instrumental Analysis, Saunders College Publishing, 1992. L. R. Snyder, J. J. Kirkland: Introduction to Modern Liquid Chromatography, J. Wiley Publ. 1974. P. Haddad, P. Jackson: Ion Chromatography, Elsevier Publ. 1992. R. Scott: Liquid-chromatography Detectors, Elsevier Publ. 1986. E. Kováts: Chromatographic Methods, Lausanne, EPFL, Lecture Notes, 1994.