

SAMPLE PREPARATION FOR ENVIRONMENTAL AND BIOMEDICAL ANALYSIS

Prof. Jan Åke Jönsson, Center for analysis and synthesis, Department of Chemistry, Lund University, POB 124, 221 00 Lund, Sweden, jan_ake.jonsson@organic.lu.se

Dates of presentation: xxx

ABSTRACT

In analytical chemistry, sample preparation is an important activity. It forms the link between samples from the environment, from biological specimens, from industrial products, etc, and the analytical instruments. In most applications of chemical analysis, unit operations as different types of extraction, enrichment, derivatisation, solvent changes and purification are necessary in order to be able to successfully apply modern and sensitive instruments.

These lectures will cover most of the techniques that are used for sample preparation in modern organic analytical practice with some emphasis on miniaturized membrane-based extraction techniques.

Preliminary contents:

Sample preparation techniques for liquid samples, 6 hours

- Liquid liquid extraction
- Solid phase extraction
 - Molecular imprinting
- Solid phase microextraction
 - Stir-bar sorptive extraction
- Liquid phase microextraction
 - Drop techniques
 - Hollow fiber and other membrane techniques
- Head-space extraction (static and dynamic)

Sample preparation techniques for solid samples, 4 hours

- Soxhlet extractions
- Supercritical fluid extractions
- Pressurized liquid extraction
- Microwave-assisted extraction

Membrane extraction techniques, 4 hours

- Different formats
- Theoretical principles
- Equilibrium extraction