

Instrumental Analysis

Syllabus Number

5D258

Special Subjects

Elective 2 credit

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1. Course Description

In this course, principles and applications of solvent fractionation, chromatography, and instrumental analyses will be studied. Key words in this lecture are organic solvents, solvent fractionation, column chromatography, thin layer chromatography, gas chromatography, high performance liquid chromatography, ultraviolet-visible spectroscopy, infrared spectroscopy, ^1H - and ^{13}C -NMR spectroscopy, and mass spectrometry. Skills obtained by this class are related to DP2 and DP3.

2. Course Objectives

The aim of this course is to deal with methods of extracting, purifying, and identifying naturally occurring substances such as biologically active substances and food ingredients.

3. Grading Policy

Quiz every time and report: 40%

Finals: 60%

4. Textbook and Reference

Textbook

Handouts are used.

5. Requirements(Assignments)

N/A

6. Note

7. Schedule

[1] Learn about solvents and solvent fractionation.

[2] Learn about partition and adsorption chromatographies.

[3] Learn about ion exchange, gel filtration, electrophoresis, and distillation.

[4] Learn about high performance liquid chromatography (HPLC).

[5] Learn about ultraviolet spectrum.

[6] Learn about optical rotation and infrared spectrum.

[7] Learn about basic nuclear magnetic resonance (NMR).

- [8] Learn about ^1H -NMR.
- [9] Learn about ^{13}C -NMR.
- [10] Learn about 2D-NMR and application of NMR.
- [11] Learn about analysis of NMR spectrum.
- [12] Learn about ionization methods in mass spectrometry (MS).
- [13] Learn about ion separation methods in MS, LC/MS, GC/MS, and analysis of mass spectrum.
- [14] Visit a laboratory to study real instruments of HPLC and MS as practice.
- [15] Finals and explanation.