

60628 - Advanced techniques in molecular spectroscopy and scanning probe microscopies

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	542 - Master's in Chemical Research
ECTS	3.0
Course	1
Period	Second semester
Subject Type	Optional
Module	---

1. Basic info

1.1. Recommendations to take this course

1.2. Activities and key dates for the course

2. Initiation

2.1. Learning outcomes that define the subject

2.2. Introduction

3. Context and competences

3.1. Goals

3.2. Context and meaning of the subject in the degree

3.3. Competences

3.4. Importance of learning outcomes

4. Evaluation

5. Activities and resources

5.1. General methodological presentation

It is interesting for the students to learn about advanced spectroscopic techniques and scanning probe microscopies, as in any area of chemistry (organic, inorganic and analytical chemistry, materials science...) students will need to understand and use this knowledge in their scientific activities or bibliographic studies.

5.2. Learning activities

5.3. Program

60628 - Advanced techniques in molecular spectroscopy and scanning probe microscopies

- Interactive lectures, theory and problems on advanced spectroscopic techniques (1.6 ECTS):

Fluorescence and phosphorescence spectroscopy.

Photoelectron spectroscopy: XPS, UPS, Auger.

Introduction to LASERs and their applications in spectroscopy.

- Interactive lectures, theory and problems on scanning probe microscopies (0.7 ECTS):

Atomic force microscopy (AFM); Scanning tunneling microscopy (STM); Introduction to other scanning probe microscopies.

- Laboratory sessions (0.7 ECTS).

5.4.Planning and scheduling

5.5.Bibliography and recommended resources

- BIBLIOGRAPHY

1. Fluorescence and Phosphorescence Spectroscopy. D. Rendell, D. Mowthorpe . John Wiley & Sons Inc. 1987.
2. Spectrophotometry and Spectrofluorimetry (2 nd edition). M. G. Gore. Oxford University Press 2005.
3. Photoelectron Spectroscopy (3 rd edition). S. Huffner. Springer 2003.
4. An Introduction to Laser Spectroscopy (2 nd edition). D. L. Andrews, A. A. Demidov. Springer 2002.
5. The handbook of Surface imaging and visualization. Edited by Arthur T. Hubbard. CRC Press, Inc. 2003

- SPECIALISED BIBLIOGRAPHY

1. Laser Spectroscopy, Vol. 1: Basic Principles; Vol. 2: Experimental Techniques (4 th edition). W. [Demtröder](#) . Springer 2009.