ERASMUS+

EU programme for education, training, youth and sport

Incoming student mobility

Name of UNIOS University Unit: Department of Chemistry

COURSES OFFERED IN FOREIGN LANGUAGE FOR ERASMUS+ INDIVIDUAL INCOMING STUDENTS

Department or Chair within the UNIOS Unit	Department of Chemistry

Study program	Graduate university study of Chemistry-research program

Study level	Graduate

Course title	Advanced inorganic chemistry laboratory
Course code (if any)	KD2103
Language of instruction	English
Brief course description	Experimental work in a advanced laboratory involves self-introduction to advanced synthesis and analysis techniques used in inorganic chemistry. List of exercises: 1. Synthesis of organic ligands: a) Preparation of 2- [5- (2-formylphenoxy) pentoxy] benzaldehyde b) Preparation of 1,5-diaza-2,4: 7,8: 16,17-tribenzo-9,15-dioxa-cyclooctadeca-1,5-diene c) Oxidation of 2- [5- (2-formylphenoxy) pentoxy] benzaldehyde d) IR spectroscopy of prepared ligands. 2. Macrocyclic effect and template synthesis: a) Preparation of [5,7,12,14-Me4-2,3: 9,10-benzo2 [14] hexaenato (2-) N4] nickel (II) b) Demethalization of [5,7,12,14-Me4-2,3: 9, 10-benzo2 [14] hexaenato (2-) N4] nickel (II) c) IR spectroscopy of the prepared compounds 3. Spectrochemical series of ligands: a) Preparation of diaquabis (ethylenediamine) copper (II) [Cu (en) 2 (H2O) 2] I2 b) Spectrophotometric determination of complex compounds with Cu (II) ion 4. Methods of preparation of unit crystals: a) Preparation of unit crystals from aqueous solutions b) Seminar exercise: Preparation of unit crystals with selected organic ligands (Exercise 1) c) Solving and refining crystal structures 5. Metal-organic frameworks: a) Preparation of MOF-5 b) Characterization of MOF-5 by X-ray diffraction c) Characterization of MOF-5 by thermal analysis 6. Preparation of perovskite: a) Preparation of CaMnO3 b)

	Characterization by CaMnO3 by X-ray diffraction c) Characterization of CaMnO3 by thermal analysis At the beginning of the lab-work, each student, in agreement with the assistant, chooses a series of syntheses / analyses beyond the proposed list, independently finds literature sources that help him create the experiment, and selects appropriate techniques for conducting the experiment and appropriate techniques for product characterization.
Course entry requirements (Preceding courses)	-
Form of teaching	Practical work in the laboratory, keeping a laboratory notebook and writing and presentation of experimental results.
Form of assessment	Entrance exams (before each exercise) and a final exam that is taken in writing and orally.
Number of ECTS	5
Class hours per week	4 (exercises)
Minimum number of students	-
Period of realization	Winter semester
Lecturer	Tomislav Balić