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| **Study program:** Master studies Chemistry | | | | |
| **Course title:** Surface chemistry and colloid chemistry (H224C) | | | | |
| **Name of lecturer/lecturers:** Marjan Raanđelović | | | | |
| **Type of course:** Elective | | | | |
| **Number of ECTS allocated;** 6 | | | | |
| **Course objectives**  The goal of theoretical and practical teaching in this subject is to acquire advanced knowledge about colloidal systems with a highly developed specific surface area. The surface is responsible for numerous processes and phenomena in nature and in adsorption-catalytic processes. Therefore, the surface is the arena where adsorption and catalytic processes are played out. Today, colloidal chemistry is widely used in various fields, and the latest technological field called nanotechnology is based on the knowledge from this field. | | | | |
| **Course outcomes**  Upon completion of this course, students will acquire knowledge that will be of great importance to them in the field of preparation and destabilization of various colloidal systems, synthesis of nanomaterials, etc. Knowledge in the field of colloidal chemistry is of great practical importance for almost all economic branches, as well as in the field of environmental protection. | | | | |
| **SYLLABUS**  *Lectures*  Introductory lecture; Classification of colloids; Lyophilic and lyophobic colloids; Production and properties of colloids; Micellar colloids; Emulsification and washing; Methods of purification and extraction of colloids; Stability and coagulation of colloids; Gels and membranes; Emulsions and microemulsions; Aerosols and aerogels; Surface, surface states and surface centers; Physical-chemical interactions on the surface; Chemistry of surface states; Adsorption and ion-electronic processes on the surface;  *Laboratory work*  Obtaining a stable MnO2 salt; Examination of the coagulation power of electrolytes; Stern stabilization of AgCl salt; Production and stability of foam; Preparation and stability of the emulsion | | | | |
| References  Lj. Đaković,, Koloidna hemija, Zavod za udžbenike i nastavna sredstva, Beograd, Tehnološki fakultet, Novi Sad,1995/2003.  M.M. Purenović, Reakcije u čvrstim telima i na njihovoj površini, Filozofski fakultet, Univerzitet u Nišu, 1994.  Georgios M. Kontogeorgis, Soren Kiil, Introduction to Applied Colloid and Surface Chemistry, Wiley, 2016  Serija elektronskih nastavnih materijala razvijenih u okviru ERASMUS+ NETCHEM projekta (http://mdl.netchem.ac.rs/course/view.php?id=89 | | | | |
| **Active teaching classes** | **Lectures 45** | | **Laboratory work 15** | |
| **Teaching mode:** Theoretical-interactive teaching with visual demonstrations using videos and individual laboratory exercises. | | | | |
| **ASSESSMENT METHODS AND CRITERIA (Max 100 points)** | | | | |
| **Pre exam duties** | **Points** | **Final exam** | | **Points** |
| Activity during lectures | 5 | Written examination | | 30 |
| Practical teaching | 5 | Oral examination | | 30 |
| Teaching colloquia | 20 |  | |  |
| Seminar | 10 |  | |  |