

<b>Study programme:</b> Specialist academic studies in chemistry (SH)				
<b>Course Title:</b> Carbon clusters in nano medicine				<b>Course Code:</b> SH -616
<b>Lecturer:</b> Aleksandar Djordjevic, full professor				
<b>Status:</b> elective				
<b>ECTS:</b> 5				
<b>Requirements:</b> none				
<b>Learning objectives:</b> To introduce the physical characteristics, principles of chemical transformation of fullerene carbon clusters and nano-tubes, graphens and potential applications of derivatives and nano composites in nanomedicine.				
<b>Learning outcomes:</b> Studying the chemical properties of fullerene carbon clusters, nano-tubes, graphens with the emphasis on biologically active derivatives and nano composites and their potential applications in nano medicine.				
<b>Syllabus</b>  The lectures address the following topics: concepts of carbon clusters, physical and chemical properties of fullerenes, nano-tubes, graphens and their commercial production. Chemical transformations of carbon clusters with the aim of increasing the solubility in polar solvents and the introduction of reactive functional groups as a precursor in the synthesis of new drugs and nano-composites. Physical methods of determination and separation of nanoparticles in solutions as well as thin layers: DLS, SEM, TEM, AFM, methods for nano particles separation. Biological properties of cluster derivatives and nano composites.				
<b>Literature</b> 1. Fullerenes Chemistry, Physics and Technology, Kadish, K.M., Ruoff R.S., Wiley Interscience, N.Y., 2000 2. Periodic Nanostructures (Developments in Fullerene Science), Mircea V. Diudea and Csaba L. Nagy Springer, Berlin, 2007 3. Fullerenes, chemistry and reaction, Hirsch A., Brettreich M. Wiley VCH, Verlag, Weinheim, 2005 4. Sciences of fullerenes and carbon nanotubes, Dresselhaus M.S., Dresselhaus G., Eklund P.C. Academic Press, University of Kentucky, 1996 5. Fullerenes Based Materials structure and Properties, K. Prassides, Springer, Berlin, 2004 6. Medicinal Chemistry and Pharmacological Potential of Fullerenes and Carbon Nanotubes Carbon Materials: Chemistry and Physics, 2008				
<b>Active teaching load</b>				<b>Other:</b>
<b>Lectures:</b> 2	<b>Exercises</b>		<b>Other forms of teaching:</b> 2	
	<b>Computational</b>	<b>Laboratory</b>		<b>Study research work:</b>
<b>Teaching methodology</b> Lectures, seminar papers, consultative work.				
<b>Grading (maximum number of points 100)</b>				
<b>Pre-exam obligations</b>	points	<b>Final exam</b>		points
Active participation in lectures	10	Written exam		40
Practical teaching	/	Oral exam		/
Colloquia	/			
Seminar(s)	50			