



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Koordinacijska kemija
Course title:	Coordination Chemistry

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Enovit magistrski študijski program druge stopnje Predmetni učitelj		3.	zimski
Five-year master's degree program Subject Teacher		3.	autumn

Vrsta predmeta / Course type

Izbirni / elective

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
20		10			60	3

Nosilec predmeta / Lecturer:

Matjaž Kristl

Jeziki /

Languages:

Predavanja / Lectures:

Vaje / Tutorial:

Slovenski / Slovenian

Slovenski / Slovenian

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Jih ni

Prerequisites:

None

Vsebina:

Content (Syllabus outline):

- Uvod v koordinacijsko kemijo, ligandi, koordinacijska števila
- Izomerija koordinacijskih spojin
- Nomenklatura koordinacijskih spojin
- Kemijske vezi v koordinacijskih spojinah
- Barve in magnetne lastnosti koordinacijskih spojin
- Organokovinske spojine: karbonili, metaloceni
- Reakcije in stabilnost koordinacijskih spojin
- Uporaba koordinacijskih spojin

- Introduction into coordination chemistry, ligands, coordination numbers
- Isomerism of coordination compounds
- Nomenclature of coordination compounds
- Chemical bonding in coordination compounds
- Colors and magnetic properties of coordination compounds
- Organometallic compounds: carbonyls, metallocenes
- Reactivity and stability of coordination compounds
- Use of coordination compounds

Temeljni literatura in viri / Readings:

- F. Lazarini in J. Brenčič, Splošna in anorganska kemija, pogl. 11: Koordinacijske spojine (str. 241 - 261), FKKT, Univerza v Ljubljani, 2004.
- M. J. Winter, d-Block Chemistry, Oxford University press, Oxford, 2005.

Cilji in kompetence:

Študenti se usmerjajo na področje koordinacijske kemije. Spoznajo metodiko dela, zastavitve problema in njegovega reševanja. Kritično ocenjujejo pristope in teorije.

Objectives and competences:

The student further develop basic knowledge on coordination chemistry. The student should be able to use factual knowledge and extrapolate from this to predict unknown facts and to solve the problems connected with coordination compounds.

Predvideni študijski rezultati:

Znanje in razumevanje:

Študent pozna in razume osnovne pojme in teorije s področja koordinacijske kemije, opredeljene v vsebinah in jih zna uporabiti pri analizi in reševanju problemov. Študent je sposoben razlikovati med različnimi koordinacijskimi spojinami in povezati strukturo koordinacijske spojine z njenimi lastnostmi.

Intended learning outcomes:

Knowledge and understanding:

The student is familiar with basic concepts and theories of coordination chemistry and is able to use them to analyze and solve practical and theoretical problems connected with coordination compounds. The student is able to distinguish between different coordination compounds and to link the structure of the coordination compounds with its properties.

Prenesljive/ključne spretnosti in drugi atributi: Študent se seznani s pristopi pri reševanju konkretnih problemov, razvija zmožnost uporabe informacijske tehnologije in sposobnost komuniciranja v strokovni javnosti.	Transferable/Key Skills and other attributes: The students knows the methods to solve practical problems, develops his informational and professional communication skills.
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Metode poučevanja in učenja:

<ul style="list-style-type: none"> • Ustna predavanja z uporabo Power Point prezentacij • Obravnava študijskih primerov • Delo v laboratoriju z aktivnim skupinskim delom
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Learning and teaching methods:

<ul style="list-style-type: none"> • Oral lectures using Power Point presentation • Case studies • Active laboratory work in small groups
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Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

Način (pisni izpit, ustno izpraševanje, naloge, projekt):	Delež (v %) / Weight (in %)	Type (examination, oral, coursework, project):
Izpit je opravljen, če so opravljene vse obveznosti:		The student passes the examination if s(he) successfully passed all the following obligations:
Ustni izpit	70	Oral exam
Aktivno delo na predavanjih	10	Active work during lectures
Aktivno delo na vajah	20	Active laboratory work

Reference nosilca / Lecturer's references:

<p>1. DOJER, Brina, PEVEC, Andrej, BREZNIK, Katja, JAGLIČIĆ, Zvonko, GYERGYEK, Sašo, KRISTL, Matjaž. Structural and thermal properties of new copper and nickel single-source precursors. <i>Journal of molecular structure</i>. [Print ed.]. Oct. 2019, vol. 1194, str. 171-177, ilustr. ISSN 0022-2860. DOI: 10.1016/j.molstruc.2019.05.047. [COBISS.SI-ID 24538632]</p> <p>financer: ARRS, Programi, P1-0403 (A), SI, Računsko intenzivni kompleksni sistemi</p> <p>2. DOJER, Brina, PEVEC, Andrej, JAGLIČIĆ, Zvonko, KRISTL, Matjaž. Cobalt(II) complexes with hydroxypyridines and halogenides. <i>Journal of molecular structure</i>. [Print ed.]. 2017, vol. 1128, str. 724-729. ISSN 0022-2860. DOI: 10.1016/j.molstruc.2016.09.023. [COBISS.SI-ID 22599688]</p> <p>3. DOJER, Brina, PEVEC, Andrej, JAGLIČIĆ, Zvonko, DROFENIK, Mihael, KRISTL, Matjaž. Nickel(II) pyridinecarboxamide complexes : solvothermal synthesis, crystal structures and magnetic properties. <i>Inorganica Chimica Acta</i>. [Print ed.]. 2016, vol. 446, str. 124-131. ISSN 0020-1693. DOI: 10.1016/j.ica.2016.03.002. [COBISS.SI-ID 22046984]</p> <p>4. HOJNIK, Nuša, KRISTL, Matjaž, FERK, Gregor, GOLOBIČ, Amalija, TUREL, Matejka, JAGLIČIĆ, Zvonko, DROFENIK, Mihael. Complexes of Eu(III), Tb(III) and Cu(II) with proton transfer compound between 2,6-pyridinedicarboxylic acid and 2-aminobenzothiazole : characterization of the structures and physical properties. <i>Journal of coordination chemistry</i>. 2016, vol. 69, iss. 9, str.</p>

1484-1498, ilustr. ISSN 0095-8972. DOI: [10.1080/00958972.2016.1182632](https://doi.org/10.1080/00958972.2016.1182632). [COBISS.SI-ID [19527702](https://www.cobiss.si/id/19527702)]

5. HOJNIK, Nuša, KRISTL, Matjaž, GOLOBIČ, Amalija, JAGLIČIĆ, Zvonko, DROFENIK, Mihael. Hydrolytic synthesis of novel lanthanide(III) complexes with pyridine-2,6-dicarboxylic acid. *Journal of molecular structure*. [Print ed.]. 5 Jan. 2015, vol. 1079, str. 54-60, ilustr. ISSN 0022-2860. DOI: [10.1016/j.molstruc.2014.09.029](https://doi.org/10.1016/j.molstruc.2014.09.029). [COBISS.SI-ID [18148118](https://www.cobiss.si/id/18148118)]