UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF CHEMISTRY
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Bachelor of Science in Chemistry   **MODULE HANDBOOK**

Module name:	Structure Analysis of Inorganic Compounds
Module level, if applicable:	Undergraduate
Code:	KMA 6224
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	6th
Module coordinator:	Prof. A. K. Prodjosantoso, Ph.D.
Lecturer(s):	Prof. A. K. Prodjosantoso, Ph.D.
Language:	Bahasa Indonesia, English
Classification within the curriculum:	Elective Course
Teaching format / class hours per week during the semester:	Lectures: 100 minutes lectures, 120 structured activities and 120 individual study per week
Workload:	Total workload of the activity is 90,67 hours per semester which consists of 100 minutes lectures, 120 structured activities and 120 individual study per week for 16 weeks
Credit points:	2 SKS (3 ECTS)
Prerequisites course(s):	-
Course Outcomes	After taking this course, the students have ability to: CO1. Able to define the d^n for transition metal in coordination compound and predict the type of its transition CO2. Able to apply the Tanabe-Sugano curve to analyze the UV-Vis spectra of coordination compound and

	define the relation between the UV-Vis spectra character towards structure CO3. Able to define the band gap energy and optic properties of inorganic compound from its UV-Vis Spectra CO4. Able to interpret the FTIR spectra of inorganic compound CO5. Able to make relation, define, compare, and evaluate FTIR of aluminosilicate materials toward its chemical structure CO6. Able to analyze XRD diffractogram and describe the relation between the parameters and the structure of crystalline materials CO7. Able to define the relation between X Ray diffraction pattern with FTIR spectra data CO8. Able to analyze the microstructure of inorganic materials from SEM graph CO9. Able to do a search and describe the results of their study using their own language regarding the research in structure analysis of inorganic material
Content:	This course discusses elucidation of inorganic materials using UV-Vis Spectrometer, FT-IR, X-Ray Diffraction (XRD), and SEM instruments. The study focuses on the relation between the structure and properties of inorganic salts, coordination compound, aluminosilacate materials (zeolite, clay), and metal oxide.
Study / exam achievements:	The final mark will be weight as follow:

No	CO	Assessment Object	Assessment Technique	Weight
1	CO1, CO2, CO3, CO4, CO5,	Structural assignment: ability to rasionalize and describing	Assignment	15%
2	CO6, CO7, CO8, CO9	Structural assignment: ability to applying the formula according to context	Assignment	15%
3		Structural assignment: ability to collaborate, analyze, rasionalize, and communicate	Assignment	15%
4		Individual assignment: skill to collect literacy,	Assignment	15%

			understanding, and describing		
	5		Mid term exam	Written test	20%
	6		Final exam	Written test	20%
				Total	100%

Forms of media:	Board, LCD Projector, handouts, PPT slides, and stationaries
Reference:	A. Ángel Vegas Molina, 2018, Structural Models of Inorganic Crystals. From the Elements to the Compounds, 1st ed., Universitat Politècnica de València
	B. Jan Chyba, Martin Novák, Petra Munzarová, Jan Novotný, and Radek Marek, 2018, Through-Space Paramagnetic NMR Effects in Host–Guest Complexes: Potential Ruthenium(III) Metallodrugs with Macrocyclic Carriers, *Inorganic Chemistry*, 57, 15, 8735-8747
	C. Lukáš Jeremias, Jan Novotný, Michal Repisky, Stanislav Komorovsky, and Radek Marek, 2018, Interplay of Through-Bond Hyperfine and Substituent Effects on the NMR Chemical Shifts in Ru(III) Complexes, *Inorganic Chemistry*, 57, 15, 8748-8759
	D. Longfei Li, Ming Lei, Li Liu, Yaoming Xie, and Henry F. Schaefer III, 2018, Metal–Substrate Cooperation Mechanism for Dehydrogenative Amidation Catalyzed by a PNN-Ru Catalyst, *Inorganic Chemistry*, 57, 15, 8778-8787
	E. Muller U (2008), *Inorganic Structural Chemistry*, 2nd Edition, Wiley VCH
	F. Sangeeta, D., LaGraff, J.R. (2004), *Inorganic Materials Chemistry Desk Reference*, 2nd Edition, CRC Press
	G. Setia Budi, A (2007), *Karakterisasi Material: Prinsip dan Aplikasinya dalam Penelitian Kimia*, Erlangga
	H. Suminar, S (1999), *Analisis Data Difraksi dengan Metode Rietveld*, Pustaka Mandiri

PLO and CO mapping

CO	PLO									
	Attitude	Generic Skills		Knowledge				Specific Skills		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1					✓					
CO2					✓					
CO3					✓					
CO4							✓			
CO5							✓			
CO6					✓					
CO7					✓					
CO8									✓	
CO9					✓					