朝陽科技大學 094學年度第2學期教學大綱
Basic Inorganic Chemistry 初等無機化學

當期課號	1441	Course Number	1441
授課教師	楊聰仁	Instructor	YANG,TSONG JEN
中文課名	初等無機化學	Course Name	Basic Inorganic Chemistry
開課單位	應用化學系(四日)二A	Department	
修習別	選修	Required/Elective	Elective
學分數	3	Credits	3
課程目標	以分子對稱與群論爲中心，內容涵蓋原子構造、原子光譜、價鍵理論、分子軌道理論、固態晶體構造。	Objectives	The course will concentrate on the introduction of symmetry and group theory, including atomic structure, atomic spectra, valence bond theory, molecular orbital theory, crystal structure.
教材	Gary L. Miessler, Inorganic Chemistry, 3rd. Edition, 2004.	Teaching Materials	
成績評量方式	平時測驗40%,期中考30%,期末考30%.	Grading	Quiz 40%; Mid-term Exam.30%; Final Exam. 30%.
教師網頁			
教學內容	1.原子構造:週期表,de Broglie 方程式,氫原子光譜與波耳氫原子理論,Rydberg 方程式,多電子原子光譜,Aufbau構築原理,Pauli不共容原理,Hund通則,Heisenberg不確定原理,Schrodinger方程式,量子數,原子軌道,電子組態,游離能,電子親合力. 2.化學鍵結理論:Lewis構造式,價鍵理論,VSEPR理論,分子軌道理論. 3.群論:對稱元素與對稱操作,矩陣,對稱乘法表,特徵表,可化簡與不可化簡表示式,在分子紅外光譜之應用, 4.酸鹼理論:酸鹼定義(Arrehnius,Bronsted-Lowry,Lewis,Solvent System),酸性強度,電子因素與立體因素,HSAB原理. 5.晶體構造:單位晶胞,原子堆疊方式,立方體,體心立方,面心立方,六方最密堆積,Bragg方程式,離子晶體構造.	Syllabus	1.Atomic Structure:Periodic Table,de Broglie equation,Hydrogen atom spectrum, Bohr Theory, Rydberg equation,Many-electron atom spectrum, Aufbau process,Pauli exclusion principle,Hund's rule, Heisenberg uncertainty principle, Schrodinger equation, Quantum numbers, Electron configuration, Ionization potential, Electron affinity. 2.Chemical Bonding Theory: Lewis Structures, Valence Bond Theory, VSEPR Theory, Molecular Orbital Theory. 3.Group Theory:Symmetry Elements and Symmetric Operations,Multiplication Table,Character Table, Reducible and Irreducible Representations, Application to Molecular IR Spectra. 4.Acids and Bases:Definitions(Arrehnius,Bronsted-Lowry,Lewis,Solvent System), Acidic Strength, Electronic Factor,Steric Factor,HSAB Principle. 5.Crystal Structures:Unit Cell, Atomic Packing, Cubic Structure, BCC, FCC, HCP, Bragg's Equation,Ionic Crystal Structures.

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