

## Detailed Licensing

### Overview

**Title:** Chem 205: Symmetry, Spectroscopy, and Structure

**Webpages:** 108

**Applicable Restrictions:** Noncommercial

#### All licenses found:

- [CC BY-NC-SA 4.0](#): 97.2% (105 pages)
- [Undeclared](#): 2.8% (3 pages)

### By Page

- [Chem 205: Symmetry, Spectroscopy, and Structure - CC BY-NC-SA 4.0](#)
  - [Front Matter - CC BY-NC-SA 4.0](#)
    - [0: Agenda - CC BY-NC-SA 4.0](#)
    - [TitlePage - CC BY-NC-SA 4.0](#)
    - [InfoPage - CC BY-NC-SA 4.0](#)
    - [Table of Contents - Undeclared](#)
    - [Licensing - CC BY-NC-SA 4.0](#)
    - [7: Writing Topics - CC BY-NC-SA 4.0](#)
      - [7.1: Polarization Sensitive Electronic Spectra \(Anisotropy\) - CC BY-NC-SA 4.0](#)
      - [7.2: Circular Dichroism \(Electronic\) - CC BY-NC-SA 4.0](#)
      - [7.3: Influence of Absorption Spectra based on Molecular Structure - CC BY-NC-SA 4.0](#)
      - [7.4: Two-Photon Absorption - CC BY-NC-SA 4.0](#)
      - [7.5: Electronic Absorption Selection Rules - CC BY-NC-SA 4.0](#)
      - [7.6: Resonant Raman Scattering - CC BY-NC-SA 4.0](#)
      - [7.7: Circular Dichroism \(Vibrational\) - CC BY-NC-SA 4.0](#)
      - [7.8: FTIR Operation - CC BY-NC-SA 4.0](#)
      - [7.9: Fourier Transform Algorithms in FTIR - CC BY-NC-SA 4.0](#)
      - [7.10: Rotational Raman Spectroscopy - Li Wang - CC BY-NC-SA 4.0](#)
      - [7.11: Vibrational Absorption Selection Rules - CC BY-NC-SA 4.0](#)
      - [7.12: Microwave Rotational Spectroscopy - CC BY-NC-SA 4.0](#)
      - [7.13: Two-photon Fluorescence - Rachel Siegel - CC BY-NC-SA 4.0](#)
      - [7.14: 2D NMR \(General Properties\) - CC BY-NC-SA 4.0](#)
      - [7.15: Spin Echos - CC BY-NC-SA 4.0](#)
      - [7.16: X-ray Photoelectron Spectroscopy \(XPS\) - Nick Mrachek - CC BY-NC-SA 4.0](#)
      - [7.17: Sensitivity of XANES on Oxidation State of Elements - Ivan Opara - CC BY-NC-SA 4.0](#)
      - [7.18: Sensitivity of XANES on Chemical Environment \(e.g., bonding\) - CC BY-NC-SA 4.0](#)
      - [7.19: X-Ray Generation and Detection Sources - CC BY-NC-SA 4.0](#)
      - [7.20: Analysis of XAFS Spectra - Kingston Robinson - CC BY-NC-SA 4.0](#)
      - [7.21: X-Ray Photoelectron Spectroscopy - CC BY-NC-SA 4.0](#)
      - [7.22: Magic Angle Spinning Solid-State NMR - Kayla Osumi - CC BY-NC-SA 4.0](#)
      - [7.23: Electron-Nuclear Double Resonance \(ENDOR\) - Liam Twomey - CC BY-NC-SA 4.0](#)
      - [7.24: Double Electron-Electron Resonance \(DEER\) - CC BY-NC-SA 4.0](#)
      - [7.25: Nuclear Resonance Vibrational Spectroscopy \(NRVS\) - CC BY-NC-SA 4.0](#)
      - [7.26: Nuclear Overhauser Effect - CC BY-NC-SA 4.0](#)
      - [7.27: Total Correlation Spectroscopy \(TOCSY\) - CC BY-NC-SA 4.0](#)
      - [7.28: Nuclear Overhauser Effect Spectroscopy \(NOESY\) - Joel Shirey - CC BY-NC-SA 4.0](#)
      - [7.29: <sup>1</sup>H-<sup>1</sup>H COSY \(COrelated SpectroscopY\) - Chris Suarez - CC BY-NC-SA 4.0](#)
      - [7.30: Heteronuclear Single Quantum Coherence \(HSQC\) NMR - CC BY-NC-SA 4.0](#)
      - [7.31: Rotating frame Overhauser Effect SpectroscopY \(<sup>1</sup>H-<sup>1</sup>H ROESY\) - CC BY-NC-SA 4.0](#)
      - [7.32: scanning near-field optical microscopy \(SNOM\) - Xavier Holmes - CC BY-NC-SA 4.0](#)
      - [7.33: Surface-enhanced Raman spectroscopy - Chris Suarez - CC BY-NC-SA 4.0](#)
  - [1: Basics of Spectroscopy - CC BY-NC-SA 4.0](#)
    - [1.1: Electromagnetic Radiation \(Component 1\) - CC BY-NC-SA 4.0](#)

- 1.2: Matter (Component 2) - *CC BY-NC-SA 4.0*
- 1.3: Different types of Spectroscopy - *Undeclared*
- 1.4: Absorbance and Concentration - *Undeclared*
- 1.5: Multicomponent Samples - *CC BY-NC-SA 4.0*
- 2: Electronic Spectroscopy - *CC BY-NC-SA 4.0*
  - 2.1: Transition Integrals - *CC BY-NC-SA 4.0*
  - 2.2: Vibronic Transitions - *CC BY-NC-SA 4.0*
  - 2.3: Broadening Mechanisms - *CC BY-NC-SA 4.0*
  - 2.4: The Fate of Electronic Transitions - *CC BY-NC-SA 4.0*
  - 2.5: Electronic State and Transitions - *CC BY-NC-SA 4.0*
  - 2.6: Introduction to Symmetry - *CC BY-NC-SA 4.0*
  - 2.7: The Carbonyl Group - *CC BY-NC-SA 4.0*
  - 2.8: Symmetry and Formaldehyde - *CC BY-NC-SA 4.0*
  - 2.9: Configuration Interaction - *CC BY-NC-SA 4.0*
  - 2.10: Measures of Transition Amplitudes - *CC BY-NC-SA 4.0*
  - 2.11: Term Symbols - *CC BY-NC-SA 4.0*
  - 2.12: Absorption Spectrum of Formaldehyde - *CC BY-NC-SA 4.0*
  - 2.13: Assignment of Bands Based on Solvent Effects - *CC BY-NC-SA 4.0*
  - 2.14: Solvent Effect of Fluorescence - *CC BY-NC-SA 4.0*
  - 2.15: Breaking Symmetries - *CC BY-NC-SA 4.0*
  - 2.16: Charge Transfer Bands - *CC BY-NC-SA 4.0*
  - 2.17: Conjugation Length - *CC BY-NC-SA 4.0*
- 3: Vibrational Spectroscopy - *CC BY-NC-SA 4.0*
  - 3.1: Introduction to Vibrations - *CC BY-NC-SA 4.0*
  - 3.2: Polyatomic Molecules - *CC BY-NC-SA 4.0*
  - 3.3: Raman vs. IR Spectroscopies - *CC BY-NC-SA 4.0*
  - 3.4: Resonant Raman Spectroscopy - *CC BY-NC-SA 4.0*
  - 3.5: Classification of Normal Modes - *CC BY-NC-SA 4.0*
  - 3.6: IR and Raman Activity - *CC BY-NC-SA 4.0*
  - 3.7: Non-Fundamental Transitions - Hot Bands, Combination Bands, and Fermi Resonances - *CC BY-NC-SA 4.0*
  - 3.8: Fourier Transform IR Spectroscopy - *CC BY-NC-SA 4.0*
  - 3.9: Spectra of Gases - Rovibronic Transitions - *CC BY-NC-SA 4.0*
- 4: X-ray Spectroscopy - *CC BY-NC-SA 4.0*
  - 4.1: Physical Principles - *CC BY-NC-SA 4.0*
  - 4.2: Photoelectron Spectroscopy - Valence Ionization - *CC BY-NC-SA 4.0*
  - 4.3: Back to Basics - *CC BY-NC-SA 4.0*
  - 4.4: Experimental Details - *CC BY-NC-SA 4.0*
  - 4.5: X-ray Photoelectron (XPS) Spectroscopy - *CC BY-NC-SA 4.0*
  - 4.6: X-ray Absorption Spectroscopies - *CC BY-NC-SA 4.0*
  - 4.7: Experimental modes and Data Analysis - *CC BY-NC-SA 4.0*
  - 4.8: Introduction to X-ray Absorption Spectroscopy (XAS) - *CC BY-NC-SA 4.0*
  - 4.9: X-Ray Absorption Near Edge Structure (XANES) - *CC BY-NC-SA 4.0*
  - 4.10: X-ray absorption fine structure (XAFS) - *CC BY-NC-SA 4.0*
- 5: Magnetic Resonance Spectroscopies - *CC BY-NC-SA 4.0*
  - 5.1: Nuclear Magnetic Resonance (NMR) - Intrinsic Spins - *CC BY-NC-SA 4.0*
  - 5.2: Nuclear Magnetic Resonance (NMR) - Turning on the Field - *CC BY-NC-SA 4.0*
  - 5.3: Spin 1/2 Spectra - *CC BY-NC-SA 4.0*
  - 5.4: Chemical Shifts - *CC BY-NC-SA 4.0*
  - 5.5: Boltzmann Statistics - *CC BY-NC-SA 4.0*
  - 5.6: Larmor Frequency - *CC BY-NC-SA 4.0*
  - 5.7: Ensemble Effects - *CC BY-NC-SA 4.0*
  - 5.8: Precession and Relaxation - *CC BY-NC-SA 4.0*
  - 5.9: Chemical Shifts - *CC BY-NC-SA 4.0*
  - 5.10: Fourier Transform (pulsed) NMR - The way things are really done these days - *CC BY-NC-SA 4.0*
  - 5.11: Spin-Spin, J-Coupling or indirect dipole-dipole coupling (all the same phenomenon) - *CC BY-NC-SA 4.0*
  - 5.12: <sup>13</sup>C NMR Spectroscopy - *CC BY-NC-SA 4.0*
  - 5.13: Nuclear Overhauser Effect (NOE) and 2-D NMR - *CC BY-NC-SA 4.0*
  - 5.14: Electron Paramagnetic Resonance - *CC BY-NC-SA 4.0*
  - 5.15: EPR Instrumentation - *CC BY-NC-SA 4.0*
  - 5.16: EPR Signals - *CC BY-NC-SA 4.0*
  - 5.17: EPR - Hyperfine Structure - *CC BY-NC-SA 4.0*
- Back Matter - *CC BY-NC-SA 4.0*
  - Index - *CC BY-NC-SA 4.0*
  - Glossary - *CC BY-NC-SA 4.0*
  - Detailed Licensing - *CC BY-NC-SA 4.0*