

Physical Methods in Inorganic Chemistry (Fall 2020)

CHM 6626

Time: MWF 10:40 – 11:30 (Period 4)

Classroom: Online

Contact: Chenjie Zeng, zeng@chem.ufl.edu, Sisler 329B

Office hours: Wednesday after class, and by appointment

Course Description

CHM6626, a three-credit course, will cover common physical methods that are employed in inorganic chemistry research. The basic theory, instrumentation, and applications of a variety of methods to diverse inorganic materials will be discussed. After finishing the course, students are expected to understand the physical methods applied in the literature as well as design characterization methods and analyze data for their own research. About 30 lectures will be given on the following topics (1-4 will be covered while 5-8 can be changed).

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| (1) Electronic absorption spectroscopy | (5) Photoelectron spectroscopy |
| (2) Vibration and rotation spectroscopy | (6) Raman spectroscopy |
| (3) Nuclear magnetic resonance spectroscopy | (7) X-ray diffraction |
| (4) Electron paramagnetic resonance spectroscopy | (8) Mass spectroscopy/TGA |

Reference books (The textbooks are not required but recommended)

“Physical Methods in Inorganic Chemistry” by Russell S. Drago

“Structural Methods in Inorganic Chemistry” by Ebsworth, Ranki, and Cradock

“Symmetry and Spectroscopy” by Daniel Harris

“Atkin’s Physical Chemistry” by Peter Atkins and Julio De Paula

“Inorganic Chemistry” by Gary L. Miessler, Paul J. Fischer, and Donald A. Tarr

Grades

25% Attendance/Participance/Assignments

25% Midterm exam (Mid October)

25% Oral presentation (Start from late November)

25% Final exam (12/18/2020 @ 7:30 AM - 9:30 AM)

About Oral presentation: In the last several classes, each student will give a 20 min oral presentation based on the literature survey. The presentation topics can be one of the following, (1) material-focused, that is employment of different methods to characterize and understand one inorganic material; (2) problem-focused, which is application of one method to solve different kinds of inorganic problems; and (3) new method, which is not covered in the course but the student thinks it is interesting and useful.

Useful links

UF Attendance Policies: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/#absencestext>

Canvas help: <https://lss.at.ufl.edu/help.shtml>; (352)-392-HELP.

Evaluation and feedback: <https://gatorevals.aa.ufl.edu/students/>