

Chemistry 215

Inorganic Chemistry: Structure and Bonding

Instructor

Professor Jenny Yang
Reines Hall: 3038D

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Office Hours: Monday 1-2 pm

Course: TuThu 9:30 – 10:50 pm RH 190

Grading

Homework: 20%

Quizzes: 15%

Midterm (**Nov 9**): 20%

Final Paper (**Nov 21**): 20%

Final Presentations: 20%

Presentation Participation: 5%

Final:

Your final paper and presentation will be on a current topic of interest in Inorganic Chemistry. You need to select 3 papers of interest by **Oct 17**. I will let you know within a week which option(s) are good (mostly to prevent two people doing the same paper). Good journals to look in are Journal of the American Chemical Society, Angewandte Chemie International Edition, Chemical Science, Science, Nature, Energy & Environmental Science, Inorganic Chemistry, and Organometallics, but you are welcome to pick a paper from any peer reviewed journal.

The final paper should be 5 pages maximum (including figures) in the style of an Accounts of Chemical Research Paper. This will involve looking up prior work and related work to your paper of interest and proper referencing. The font should be Arial type 12 and double spaced, with 1 inch margins. All papers are due on **Nov 21**.

The final presentations will take place **Nov 21, Nov 26, Dec 3, and Dec 5**. They should be 10-12 minutes in length with a few minutes at the end for questions and discussion. Participation in your classmate's presentations will be graded, so please feel free to ask questions. This is a good time to learn from each other!

Course Content:

This is an advanced inorganic chemistry course with an emphasis on structure and bonding. We will first go over a few different bonding theories, including valence bond, crystal field, and basic molecular orbital theory. We will then proceed to symmetry elements and group theory, and learn how this can help us construct molecular orbitals diagrams. We will use bond theory to explain the physical characteristics observed in transition metal complexes. We will also apply group theory to learn how to predict and explain the spectroscopic features we see in complexes. A short section in structural inorganic chemistry, as well as basic synthetic techniques will be covered. If there is time, we will cover basic cyclic voltammetry and current topics of interest in Inorganic Chemistry. As you may have noticed, there is an emphasis on developing your scientific writing and presentation skills. These are essential skills for a doctoral student, and the only way to get better at it is with practice!