

Chemistry 4620, Advanced Inorganic Chemistry Laboratory
Department of Chemistry, University of North Texas
Spring 2026

Laboratory Lecture (CHEM 4620.001): ENV 190; Tuesdays 2:00-2:50 pm

Lecture Instructor: Olajumoke Mary Ayeni

Office: CHM 383

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Drop-In (Office Hour): Tuesdays 3-4 pm *(If this doesn't work for you, feel free to schedule an appointment with me.)*

Laboratory Experiments: CHM 280

CHEM 4620.303 - Tuesdays 6:00-8:50 pm

CHEM 4620.304 - Thursdays 6:00-8:50 pm

However, some experiments will not take the full time, so students may need to set up a follow-up time with the lab TA outside the regular scheduled lab time before next week's lab period to complete any such experiments. This may be carried out by one or more representative(s) of each group that may need such a follow-up (or one or both TA(s) may volunteer to do the follow-up themselves).

Laboratory Teaching Assistants:

Mansi Kapoor (mansikapoor@my.unt.edu)

Neha Davange (NehaPramodDavange@my.unt.edu)

Textbook: No textbook required. Handouts, literature publications, and/or other materials will be distributed or posted online in Canvas as needed for each experiment (some may be useful for multiple experiments).

Grading Policy: Grading of the Lab accounts for the following:

- Attendance (mandatory; only 1 lab can be missed with make-up arrangements agreed upon with lab TAs)
- Lab notebook (data organization and completeness)
- Safety worksheets
- Assessment of lab skill, teamwork and right attitude to work
- Lab reports for the "Skills Experiments."
- Progress Check-ins
- Final PowerPoint presentation for the "Big Picture project"

Group	Weight
Attendance	10%
RAMP Safety Worksheets	10%
Training Experiments Lab Reports	20%
Lab Notebook Check	10%
Progress Check-Ins	10%
Final PowerPoint for Big Picture Project	30%
Lab Skill, Teamwork, and Right Attitude to Work	10%
Total	100%

Experiments: *“WE MEAN GREEN” THEME*

Weeks 1&2: Bench Synthesis: *The Breathalyzer Reaction: As Is & MEAN GREEN Alternatives Thereof*

Weeks 3& 4: Organometallic Synthesis Using Schlenk Techniques: *Synthesis and Characterization of “Piano Stool” Organometallic Complexes*

Weeks 5-12: “Big Picture” Project: *Discovery Labs/Contemporary Research in Inorganic Chemistry*

The idea of the “Big Picture” project is to emulate contemporary research in inorganic chemistry. Lab experiments in each project may have two parallel components; one is a “known component” based on published literature procedures for synthesis/purity characterization and/or property screening of materials or experiments known from the literature, while the other is a “discovery component”. Both components have a “Big Picture” -- a finite research problem that the various synthesis/characterization/screening methods are combined to solve. This has been documented successfully in the literature for the first “known component” and as is hoped to be duplicated and expanded upon for the second “discovery component” during the semester or, if needed, as a follow-up in the next offering of this course thereafter. Whether the discovery component succeeds completely or partially, or whether it does not succeed, it needs to be accounted for in the final PowerPoint presentation for your “Big Picture” project. The final PowerPoint presentations are typically the backbone for a conference presentation coauthored by ALL lab students;^{1,3} so all the data need to be presented in the presentation. In some cases, a publication coauthored by lab TAs (and possibly one or more lab students who expand the work in the Omary lab as undergraduate or graduate researchers) may be published.² More details about the PowerPoint presentation as well as what is required in each experiment will be provided during the semester, including examples from previous semesters.

Disability Accommodations: *N/A for the most part (no exams requiring ODA accommodation).* Nevertheless, all reasonable accommodation will be made to facilitate special needs. However, it is the student's responsibility to make any special needs known to the instructor and TAs. It is recommended that students with special needs first contact the Office of Disability Accommodation (ODA) staff, Sage Hall/Suite 167/ Tel. 940-565-4323, then inform the instructor. For more information, see ODA website (<http://disability.unt.edu/>).

This laboratory course includes several **non-graded surveys** administered throughout the term for student reflection, laboratory safety, and course improvement. These include the Science Self-Identity and Self-Efficacy Survey (pre- and post-course), the Lab Experience Survey (pre- and post-course), and the Risk Assessment Impact Survey. Surveys are used for instructional and program assessment purposes, responses are kept confidential and analyzed in aggregate, and completion does not affect course grades.

¹ e.g., a) Martin, K. et al. (half spring 2021 lab students/all TAs/Dr. Omary, Abstracts, Southwest Regional Meeting of the American Chemical Society, Austin, TX, United States, October 31-November 3 (2021), paper # SWRM-439. b) Myers, A. et al. (same as above but for the other half of students/all TAs/Dr. Omary, same conference, paper # SWRM-438).

² e.g., Bodenstedt, K.; Fripp, J. L.; Li, S.; Lu, Z.; Omary, M. A.; Atkinson, M. B., *J. Chem. Educ.* **2023**, 100, 1, 289–297.

³. a) Ayeni, O.M. et al. (*half spring 2025 lab students*, TAs, Dr. Omary, Dr. Atkinson), Abstracts, ACS Spring National Meeting 2026, Atlanta, GA, United States, March 22-26 (2026). b) Ayeni, O.M. et al. (*other half spring 2025 lab students*, TAs, Dr. Omary, Dr. Atkinson), Abstracts, ACS Spring National Meeting 2026, Atlanta, GA, United States, March 22-26 (2026).