Who Are the Students in CHEM 570?
An Audience Overview

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The audience you will be speaking to during your CHEM 570 presentation is quite different from the audiences you have encountered in your career so far. Most graduate students are accustomed to speaking to the following audiences, with the following expectations:

- **Scientific peers**: At conferences or in scientific talks, the audience is interested in assessing the contributions you are making to the discipline.
- **Advisors or evaluators**: In oral defenses, the audience is there to test your knowledge and understanding of the discipline.
- **Undergraduates**: As a teaching assistant or graduate mentor, the audience is interested in learning from you about a discipline in which they already have a certain level of knowledge or interest.

In most cases, then, graduate students give talks where the goal is to demonstrate what you know. This is not the case here.

**Adjusting to a New Audience and Purpose**

CHEM 570 focuses on helping teachers incorporate the latest nanotechnology research HISD’s ninth grade integrated physics and chemistry (IPC) course ([http://dept.houstonisd.org/Curriculum/main/ProjectCLEAR/ROC/HSROCS/IPC%20ROC,%201st%20Sem.PDF](http://dept.houstonisd.org/Curriculum/main/ProjectCLEAR/ROC/HSROCS/IPC%20ROC,%201st%20Sem.PDF)). The students in CHEM 570 are similar to the undergraduate audience, but differ in some significant ways that will influence the amount of context and background that you may need to provide in your presentations. Some general information on this audience follows:

- **Older than the average undergrad**: Most of the teachers enrolled in CHEM 570 have been teaching at the high school level for 5-6 years. In other words, they are seasoned professionals in their field. They will thus resemble a peer audience, or even an advisor/evaluator audience, yet will still be looking at you as an expert rather than as someone to evaluate or test.
- **Scientifically literate, but not experts**: CHEM 570 students usually have a broad understanding of high-school level science. Some are also quite current with college-level topics. Such understanding, however, should not be assumed; some of the CHEM 570 students are new teachers, and in a few cases, teachers with years of experience have been teaching based on misconceptions of the basic science. In presenting to this audience, you should be sure to explain acronyms and define technical jargon. Those with an understanding of the material will appreciate your clarity; those without will need the background to understand the material you are presenting.
• **Putting the science to use:** Your presentation in CHEM 570 serves a specific pedagogical task. In the first hour of the course, Drs. Ausman and Hutchinson will have lectured on a basic science concept. The final hour of the course is a workshop in which the teachers brainstorm teaching ideas for their classes. Your talk serves to bridge these two hours by providing a case study in actual research on the basic science. For instance, if the lecture topic is solubility, the research talk might specifically look at efforts to make single-walled nanotubes soluble in water. The hope is that your talk will help illuminate the basic science and demonstrate its relevance not just to other researchers, but in the real world.

You may organize your talk as you wish. But the most effective CHEM 570 research talks are those that help connect the students to the material. Presentations that contain some or all of the following threads are the most helpful to the students:

- Applications or real-world implications of your research.
- Concrete analogies to macro “things,” which help students visualize the research and give them ways to introduce topics to their own students.
- Illustrations of how basic science concepts relate to your research (if you don’t make these connections, Drs. Ausman and Hutchinson will in the final hour; if you do make these connections, they will serve to reinforce the first-hour lecture concepts, streamlining progress in the final hour).
- Connections between nanoscale (molecular) properties and macroscale effects. Many of these teachers teach basic science at a very macro level, without realizing that molecular detail can actually aid student understanding. Drs. Ausman and Hutchinson have as a course goal teaching these teachers to return to (or at least appreciate) the “first principles” established by experimental studies at the micro and nano level. If your talk can reinforce this concept, it will aid greatly in achieving CHEM 570’s pedagogical objectives.