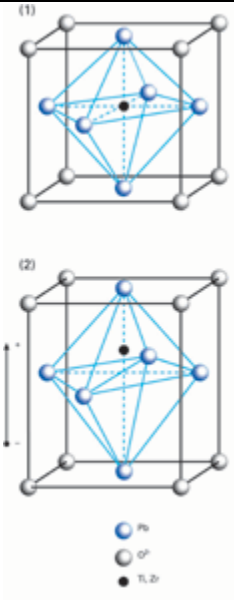
CHM 6711 -- Chemistry of Materials

Objectives
1. To introduce students to fundamental concepts in materials chemistry;
2. To show students how chemical principals can be used to understand and predict material properties.



Lead zirconium titanate, a piezoelectric ceramic.

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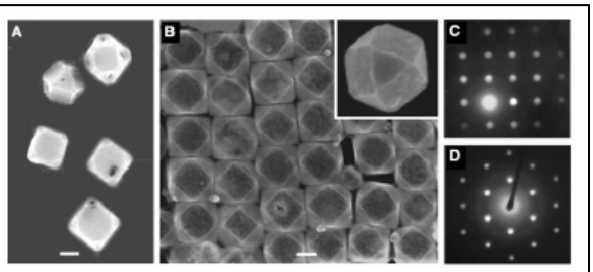
Lecture and Discussion Topics
- Photoresists and photolithographic materials
- Sol-gel chemistry
- Inorganic and organic semiconductors
- Photovoltaics
- Glasses
- Biocatalysis in materials science
- Magnetic materials
- Linear and nonlinear optical materials

Overview
Students will learn about chemical and physical aspects of cutting-edge materials and material processing techniques, including organic and inorganic materials and glasses. Lectures are conducted by the instructor and invited speakers from academia and industry, who are experts in their respective fields. The first half of each lecture focuses on the fundamentals principles underlying the selected topic. The second half is devoted to applications of the material system and current research on the topic.

Student Presentations
Each student will produce a written report and a research presentation developed around a topic of their choice selected from a list to be provided. The presentations and reports will be prepared in consultation with the instructors and should explore the topic in terms of material properties, applications, and the fundamental chemical issues associated their production and use. The length of the written report should be on the order of 15 pages and will make extensive use of both primary (peer-reviewed research articles) and secondary (review articles and monographs) literature. Each presentation should be approximately 25 minutes long and will be delivered before the class in the final weeks of the semester. The original sources for data, concepts, and figures used in the presentation should be appropriately cited.



Y. Sun *et al.*. *Science* **298**. 2176 (2002)