

UCLA

Student Learning Outcomes for the B.S. in Materials Chemistry

The knowledge learned by graduates with a B.S. major in Materials Chemistry will enable them to:

- demonstrate a broad mastery of fundamental knowledge in materials chemistry, including nanoscience, general materials synthesis and processing, device physics, and either inorganic or organic materials (for the standard or organic concentration, respectively).
- demonstrate in-depth problem solving, critical thinking, and analytical reasoning in at least three of the foundation areas.
- use computers in data acquisition and processing; use software tools for exploration and investigation of chemistry principles and models.
- identify and investigate new areas of research.
- understand the role of materials chemistry in addressing contemporary societal and global issues.

The skills learned by graduates with a B.S. major in Materials Chemistry will enable them to:

- perform basic laboratory procedures and techniques in at least four of the foundation areas involving the synthesis of materials, the characterization of materials, measurement of materials properties, and structure/function relationships.
- understand theoretically and in some cases practically the principles of modern materials characterization tools, including but not limited to X-ray diffraction, absorption and fluorescence spectroscopy, a broad range of electrical measurements, electrochemical analysis, and a range of electron and scanning probe microscopes.
- understand the basic operational principles for a broad range of devices from a fundamental materials perspective.
- conduct experimental work and handle chemicals in a safe manner following OSHA-approved regulations and procedures.
- work effectively in groups and teams of diverse peers to solve scientific problems.
- communicate materials knowledge and experimental results through written reports and oral presentations.
- use information resources to search and access current and prior research in materials chemistry, and chemical and safety databases.