

## **Center for Archaeological Materials/Center for Materials Research in Archaeology and Ethnology**

The mission of the Center for Materials Research in Archaeology and Ethnology (CMRAE), a consortium of eight Boston-area educational and cultural institutions, is to advance our understanding of prehistoric and nonindustrial societies through analysis of the structure and properties of materials associated with human activity. Plant and animal food remains and human skeletal material, as well as metal, ceramic, stone, bone, and fiber artifacts, are the objects of study, along with the environments within which these materials were produced and used. At the Center for Archaeological Materials (CAM) at MIT, investigators concentrate on the materials-processing technologies that transform natural materials into cultural objects.

At MIT, CAM is administered by the Office of the Provost. In 1998–1999, the Department of Materials Science and Engineering (DMSE) established a new undergraduate major in archaeology and materials, Course 3-C, as well as an interdisciplinary doctoral degree program in archaeological materials. These are the only academic degree programs of their kind in the United States. During AY2008, three graduate students were enrolled in the PhD program and one undergraduate majored in Course 3-C. All these students carry out their UROP and dissertation research in the CMRAE laboratory facilities.

By June 2008, eight students had graduated from the 3-C program. All eight students received the DMSE award for Outstanding Senior Thesis. DMSE awarded its first PhD to a student enrolled in the graduate degree program in archaeological materials.

In AY2008 CMRAE's annual two-term graduate subject was 3.984 Materials in Ancient Societies: Metal. Students enrolled from MIT and Brandeis University. The fall term was devoted to study of physical metallurgy, with emphasis on the properties of metals and alloys most frequently managed by early societies. Both the Sackler Museum of Art and the Peabody Museum of Archaeology and Ethnology at Harvard University contributed archaeological artifacts of metal that students analyzed by metallographic techniques in order to reconstruct their fabrication histories.

Archaeological Science, the CMRAE/CAM undergraduate subject introduced during AY1996 and offered jointly by DMSE, the Department of Chemistry, and the Department of Earth, Atmospheric, and Planetary Sciences, continues to enjoy high popularity among students from CMRAE institutions. Of the 37 students enrolled, 36 were from MIT and one was from Harvard; 11 faculty members from five CMRAE institutions lectured in the subject.

During the spring 2008 term, undergraduate students in subject 3.094 Materials in Human Experience undertook a class engineering project supported jointly by CMRAE and DMSE. They built a small-scale model of an ancient Egyptian pyramid with a 16-square-foot base. The students assembled several courses of the pyramid walls with brick-size limestone blocks. They cast other blocks from a geopolymeric material they made by mixing crushed limestone with an inorganic binder. The project was designed to test suggestions made recently by several materials scientists that portions of the

ancient Giza Plateau pyramids were assembled from giant blocks cast from a limestone geopolymer. *The Boston Globe* carried an article on the students' pyramid project on the front page of its April 22, 2008 issue.

**Heather Lechtman**

**Director**

**Professor of Archaeology and Ancient Technology**

*More information about the Center for Archaeological Materials/Center for Materials Research in Archaeology and Ethnology can be found at [http://web.mit.edu/cmrae/cmrae\\_home.htm](http://web.mit.edu/cmrae/cmrae_home.htm).*