Professor Udo Becker and his interdisciplinary research group in the Department of Geological Sciences at the University of Michigan taught an introductory geology course in June 2007 as part of the Michigan Math and Science Scholars (M MSS) program. The purpose of the M MSS program is to engage and interest high school students in math and science. The two-week geology course, titled Nano-Rocks and Mega-Molecules, provided the high school students with an introduction to basic geology, including mineralogy, petrology, geologic time, and geologic events. Typical mineralogy and petrology labs were supplemented with field trips to a gravel pit and an environmental center, as well as a tour of the structural and artistic rocks located around Ann Arbor. Other field trips included spelunking in a fracture cave and fossil hunting in Ohio. Students were also given a unique opportunity to learn and use the scanning electron microscope and the atomic force microscope. Observing everyday items using these forms of microscopy gave students a better understanding of size scales. Guest lectures by professors Rodney Ewing and Henry Pollack introduced the students to current geologic research areas that have significant global impact, specifically climate change. Classroom lessons on the nuclear fuel cycle and climate change were aided by the use of two Elements issues: “The Nuclear Fuel Cycle: Environmental Aspects” and “Energy: A Geoscience Perspective.” After calculating their carbon footprint, students used the “Energy” issue to learn about alternative energy resources.

The students had a great response to the journal. Copies of the issues were provided for the students to take home as a resource for further learning. Overall, the summer course was an eye-opening experience for the high school students, who were not only introduced to basic concepts of mineralogy but learned about molecular simulations, nanoscience, and biomineralization at the molecular level. This course was offered again in June 2008.

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