

Microsymposium

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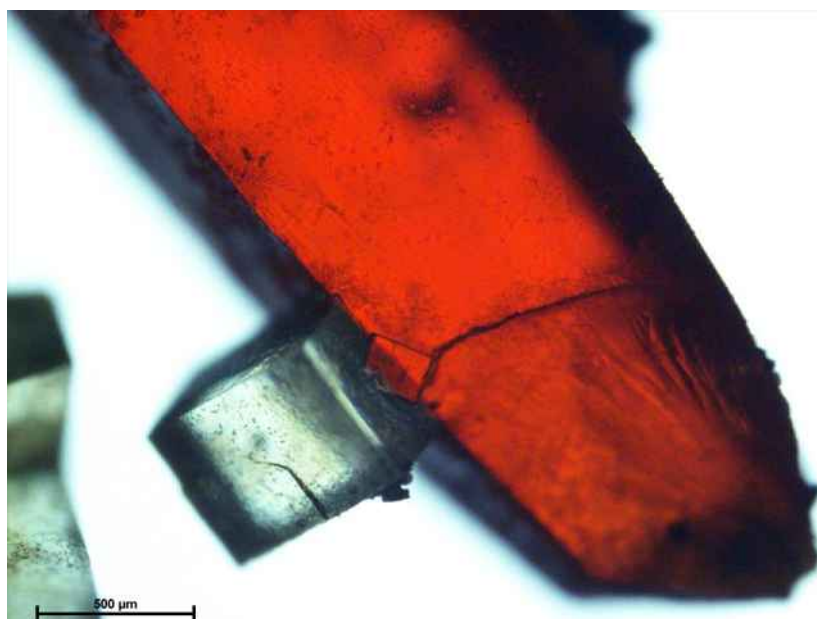
Crystal Growth to Foster Inquiry-Based Learning: First Year Science Laboratory

W. Rabeh¹, J. Bernstein^{1,2}

¹New York University Abu Dhabi, Faculty of Natural Sciences, Abu Dhabi, United Arab Emirates., ²Ben-Gurion University of the Negev, Department of Chemistry (Emeritus), Beer Sheva, Israel 84120

Crystals play an important and ubiquitous role in our everyday life with applications in medicine, industry, agriculture, and biotechnology. With the recent trends toward inquiry-based learning in undergraduate science teaching laboratory, we developed a crystals growth laboratory for first year students. While one objective is to learn how to grow and handle crystals, the laboratory is designed to foster the acquisition of basic scientific knowledge and hands on experience to develop critical laboratory skills. In this sense, it is targeted for students with diverse backgrounds and, in accord with the liberal arts curriculum at NYU Abu Dhabi readily includes non-science majors. The original inspiration for the lab came from the 1960 classic book "Crystals and Crystal Growing" by Holden and Singer. We have expanded on the emphasis there on inorganic salt crystals to require students to crystallize macromolecules as well, in a research driven environment. Similar to projects carried in more advanced courses, students write an outline of their project that is developed into a full proposal through a literature search stimulated by in class discussions and peer-review. Some of the learning goals include the ability to design and manage a research project, propose ideas and methods to explore the topic of interest, learn various techniques and equipment common in a science laboratory, the ability to analyze data, acquire best practices in lab safety, and most importantly develop their scientific writing skills. Following 4-5 weeks of crystal growing and characterization, students present their data at the end of the semester Crystal Growth Symposium first presenting a 5 minute flash poster-presentation followed by a poster session. The symposium is a collective effort to enhance the students' presentation and communication skills and to showcase and encouraging high quality of research. While still evolving, the laboratory has seen a variety of mainly student-initiated investigations not only exploring a variety of methods to grow crystals, but also in exploring the effect of magnetic field, vibration, temperature, or pH on crystal growth. We will present organizational details of the laboratory program and present examples of many posters that have been generated during four years of operating the laboratory.

[1] Alan Holden and Phylis Singer. *Crystals and Crystal Growing*. New York: Anchor Books, 1960. Print



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