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EDITORIAL

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Summer Camps

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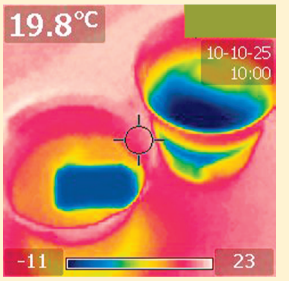
ABSTRACT: This Especially for High School Teachers piece discusses the opportunities and benefits connected with local summer camps; in particular, two successful university-based summer science camp programs. The potential use of an infrared imaging camera for inquiry-based experiments is discussed. Articles from the July 2011 issue of the *Journal of Chemical Education* are also highlighted.

KEYWORDS: Elementary/Middle School Science, High School/Introductory Chemistry, Laboratory Instruction, Public Understanding/Outreach, Inquiry-Based/Discovery Learning

FEATURE: Especially for High School Teachers



With school-age children at home, our summer schedule has its ups and downs. As summer begins, the kids relish their freedom from days filled with schoolwork and enjoy an annual trip to visit friends and relatives. But as the weeks wear on, the phrase "what can I do?" begins to make an appearance more often. Structured activities sponsored by local groups often come to the rescue. For example, the local art center offers a wide variety of art camp classes geared for both older and younger students. I let my children make their own class choices, but am particularly pleased when they select experiences that I could not easily duplicate with them at home. This might mean a class that focuses on a technique in which I have no experience or a process that requires specialized (and potentially expensive) equipment. For example, last year's choice was making cylindrical vases out of clay. A local potter skillfully led the class at the art center, then took the resulting work to his studio to fire and glaze before returning them to students. The finished vases are proudly displayed at home.

Our community park and recreation summer listings also tend to include offerings for various summer science courses, usually led by local individuals. Two articles in the July 2011 issue of the *Journal of Chemical Education* focus on examples of successful camps offered on a large scale by Canisius College in Buffalo, New York (DOI: 10.1021/ed101178h), and Spring Arbor University in Spring Arbor, Michigan (DOI: 10.1021/ed2002779). The Canisius College camp specifically serves the middle school population; Spring Arbor University's Cougar Science Camp (Figure 1) serves K−8 students.

A benefit of such camps may be to combat what Sheridan et al. refer to as a "discouraging trend" for U.S. students, "[P]erformance, as well as general interest, in science has been found to decrease dramatically as students progress through middle school to high school" (DOI: 10.1021/ed101178h). Their response, as well as that of other colleges and universities, has been to offer programs such as summer science camps. Kuntzleman and Baldwin make a related comment in their article, suggesting a possible reason for U.S. students lagging behind in worldwide science and mathematics rankings as "Oddly enough, it may be that in this land of vast resources, American children do not have many opportunities to engage in STEM activities that stimulate and inspire" (DOI: 10.1021/ed2002779). They go on to quote a letter from a parent thanking them for the opportunity for her son to participate, as there are not many science clubs available.

Benefits can reach beyond those realized by the student campers themselves. Both summer camps forge additional partnerships. For example, the Canisius College camp brings together "science-content experts" from the community who are hired to develop camp modules, graduate students from the Differentiated Instruction program as camp counselors, and undergraduate students to help assemble and test camp modules. The Spring Arbor University camp enlists the help of numerous parent volunteers, STEM teacher education students, and undergraduate students who can earn required community service hours as they test and research new experiments.

I wholeheartedly agree with the comment made by Kuntzleman and Baldwin: "We therefore applaud the efforts of chemical educators and chemistry students who are involved in presenting science to the public, providing interesting, hands-on chemistry experiments for young people to explore" (DOI: 10.1021/ed2002779).

As I mentioned earlier, I appreciate classes that offer exciting experiences with equipment we would not have ourselves. Xie's article "Visualizing Chemistry with Infrared Imaging" (DOI: 10.1021/ed1009656) describes the use of infrared (IR) cameras for inquiry-based experiments. The cost is still somewhat prohibitive (~$1,500−2,500), but Xie states that the price continues to drop. He provides several experiments that allow students to "see" phenomena such as evaporation, condensation, and latent heat, heat of solution, and vapor pressure lowering. The IR

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Figure 1. The logo used to promote the Spring Arbor University science summer camp. See Kuntzleman, T. S.; Baldwin, B. W. Adventures in Coaching Young Chemists. *J. Chem. Educ.* **2011**, *88*; DOI: 10.1021/ed2002779. Design by Brian Shaw, SAU art professor; reproduced with permission.

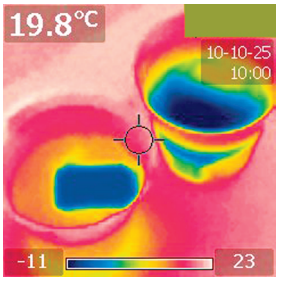

Figure 2. An IR image immediately after an ice cube was added to a cup of freshwater (left) and a cup of saturated saltwater (right). See Xie, C. Visualizing Chemistry with Infrared Imaging. *J. Chem. Educ.* **2011**, *88*; DOI: 10.1021/ed1009656.

images of the experiments are captivating, intriguing, and thought provoking (Figure 2). What if a summer science course were to offer an experience with IR cameras and such real-world processes as illustrated in this article? Or, perhaps a high school educator might find this a useful focus for an application for one of next year's ACS−Hach High School Chemistry Grants.[1]

LAURA'S TAKE ON THE ISSUE

This past school year flew by so fast and now it is time to start planning for next year. I get to teach my favorite two courses again next year, Introduction to Organic Chemistry and Introduction to Biochemistry, both one-semester courses. As I do each year, I re-examine past laboratories and look for new ones. Ling and Bridgeman's article "Quantitative Analysis in the General Chemistry Laboratory: Training Students To Analyze Individual Results in the Context of Collective Data" (DOI: 10.1021/ed1011458) provided some thoughtful and interesting ideas for me to use next year in my biochemistry class. I have used a lab similar to this in the past, but without the detail to data analysis. However, in my first-year course, we spend a significant amount of time at the start of the year learning to analyze data and then use it throughout the year, so this would be a wonderful way to incorporate that back into the biochemistry course too.

My all-time favorite part of the July issue is the summer reading suggestions. I may be in trouble this summer though because there are too many books that I want to read in the "Summer 2011 Book and Media Recommendations" organized by Cheryl B. Frech (DOI: 10.1021/ed200253m). However, I do know where I will begin, with Brian P. Coppola's suggestion of *Rediscovery of the Elements*.[2] Learning more about the elements has always been a passion of mine. I am especially interested in knowing more about their uses and how they were discovered.

PRECOLLEGE CHEMISTRY FEATURED ARTICLE

Rios, A. C.; French, G. Introducing Bond-Line Organic Structures in High School Biology: An Activity That Incorporates Pleasant-Smelling Molecules. *J. Chem. Educ.* **2011**, *88*; DOI: 10.1021/ed101117h.

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REFERENCES

(1) ACS−Hach High School Chemistry Grant. http://portal.acs.org/portal/Navigate?nodeid=2245 (accessed May 2011).

(2) Marshall, J.; Marshall, J. Rediscovery of the Elements DVD Home Page. http://www.jennymarshall.com/rediscovery.htm (accessed May 2011).