Chemist breaks with the usual stereotypes

Aldemaro Romero Jr.
CUNY Bernard M Baruch College

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The popular image of chemists is one that usually involves white lab coats and turtleneck sweaters on serious subjects. This impression could not be further from the truth for chemist Ed Navarre, an assistant professor in the department of chemistry at Southern Illinois University Edwardsville. A native of Edwardsville, Navarre received his B.S. in chemistry from McDaniel College in Maryland, and his doctorate in chemistry from the University of Vermont. Navarre’s work involves him Band 24 being on trying to prevent damage to the environment and to human health. One technique he often uses is atomic absorption, and despite the numeric name it is very common.

“The idea is to take some sample of a material you are interested in and to get it into a gas,” explained Navarre. “Then you can shine light on it from a source that promotes specific wavelengths, and then absorb them in proportion to their concentration. Then you can make some quantitative measurements that are very specific element by element across the periodic table.” This technique was developed by the German chemist Robert Bunsen in the 19th century. He also invented the burner named after him and that is a common feature in any chemistry lab. Although it is a lab-oriented technique, Navarre has been able to apply it to conditions in the field.

“I have been working on an atomic absorption instrument that is built around a light bulb filament, as a heater source. It is much smaller than the others,” he said. “We have been successfully using it at the scene of a crime to check this particular apparatus.” The device is a small enough to fit in a pocket, and this allows for it to be used out in the field. Chemists like him, an immediate application of this approach is to go to the field and analyze any toxins that can harm both the environment and humans.

“We have a field-burned housing test,” Navarre said. “I believe all children in this area are required to have a blood lead test by the time they reach second grade. And we still find children with excessively high levels. Cadmium poisoning is much less common, but in certain fields it can occur.” In addition to children, adults also may be affected by these kinds of environmental poisons. “In foundry workers it is a major issue,” Navarre said. “We have even been contacted by the Illinois EPA, in order to try and bring this instrument up to a point where they could do regular monitoring of their workers who are working around these types of materials.” The solution to this is not inexpensive, with prices between $10,000 and $15,000. Navarre believes that as demand increases, prices will be lowered. By making this apparatus portable he and his colleagues are making it simpler and less expensive, without sacrificing the quality of results.

“We are able to hit detection limits that are very comparable to the large commercial equipment,” he said. “Our sacrifices are very minimal in the breadth of a sample. A piece of commercial equipment of this kind we can usually analyze anything. What I am working on, it cannot analyze anything but what its designed for and it is very good. And if we use it at three sites, then it can be the detection limits that are appropriate. Physiological sample is one area where this particular instrument works.” One of the major sources of environmental pollution in these metals these days is from the by-products of electricity, which we dissipate more and more, particularly in developing countries.

For the Intelligencer

VILLAGE

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It’s ‘Lire here, shop here.’” We thought that was the key message, the Village Administrator Jamie Bowden said.

Village officials have set aside $25 of each of the festival sites for the banners, which will line the parade route. Each yard sign will cost approximately $60 of that.

In other businesses, the board approved a scope of services agreement with Guarantee Electrical for installation of exterior lighting. New lighting fixtures and new light bulbs will be installed at the sites selected by Guarantee and the keys to the programs are decrease in utility use and lower costs.

The cost to the village will be $15,404, but $20,370 in incentives drops that to $15,404.

An example posted at the village’s board meeting, the village currently pays $173 for exterior lighting at Miner Park. Switching lighting fixtures through Guarantee Electrical’s plan, these costs could be reduced by $62 a year.

Correction

A story in Wednesday's Intelligencer titled “Confusion on board meeting agenda” needs clarification. Dan Slusser wants to see the county use its $116 million surplus to defray the cost of maintaining the jail. He is not asking the county to pay for anything.

In fact, Slusser has not publicly stated an opinion on the matter. The Intelligencer regrets the error.