Reprinted from *Journal of Chemical Education*, Vol. 86, pp 766–767, June 2009.

edited by
Barbara A. Reisner
James Madison University
Harrisonburg, VA 22807

JCE VIPEr: An Inorganic Teaching and Learning Community

Ethan Benatan
Computing and Information Services, Reed College, Portland, OR 97202

Jezmynne Dene
Sprague Science Library, Claremont University Consortium, Claremont, CA 91711

Hilary J. Eppley
Department of Chemistry and Biochemistry, DePauw University, Greencastle, IN 46135

Margret J. Geselbracht
Department of Chemistry, Reed College, Portland, OR 97202

Elizabeth R. Jamieson
Department of Chemistry, Smith College, Northampton, MA 01063

Adam R. Johnson
Department of Chemistry, Harvey Mudd College, Claremont, CA 91711

Barbara A. Reisner*
Department of Chemistry and Biochemistry, James Madison University, Harrisonburg, VA 22807; **reisneba@jmu.edu*

Joanne L. Stewart
Department of Chemistry, Hope College, Holland, MI 49422

Lori A. Watson
Department of Chemistry, Earlham College, Richmond, IN 47374

B. Scott Williams
Joint Science Department, Claremont Colleges, Claremont, CA 91711

Inorganic chemistry is a diverse field with research areas ranging from biological systems to materials science. Graduate school prepares faculty as content experts, but often their expertise is narrow and specialized. This can make it challenging for them to introduce undergraduate students to the full breadth of a complex discipline.

Faculty need a way to stay current across the entire discipline—both with new developments in research and, perhaps even more importantly, with advances in discipline-specific teaching practices. To facilitate the effective sharing of teaching tools among faculty and the development of deep subject knowledge in support of teaching, a group of faculty from predominantly undergraduate institutions has established a virtual community of inorganic chemists, IONiC (Interactive Online Network of Inorganic Chemists). Our mission is to enhance the inorganic chemistry classroom and laboratory experience for students and faculty members through the development of a vibrant, collaborative, and open community. VIPEr, the Virtual Inorganic Pedagogical Electronic Resource, is a Web site that forms the online home for our community *(1)*.

VIPEr: The Virtual Inorganic Pedagogical Electronic Resource

VIPEr is an interactive Web resource that combines a repository of learning objects (small instructional units such as an in-class activity, an exam problem, or a lab) with social networking tools (such as forums and comment threads) to form a rich virtual community of practice *(2)* among inorganic chemistry faculty worldwide. Registration and access to all materials are freely available.[1] The Web site was designed by inorganic chemistry faculty for inorganic chemistry faculty. Teaching resources are organized by the appropriate subdiscipline of inorganic chemistry and by the type of learning object, and the Web site is fully searchable. Resources can be rated and commented on by members of the community, and we encourage users to adapt materials for their own class and post these adapted materials as well.

Learning objects currently in VIPEr include classroom and laboratory activities, selections from the literature that are suitable for class discussions, short presentations on special topics, and problem set and exam questions. Each learning object can include notes about how to integrate it into the curriculum, learning goals, and how to assess student performance. Many of the learning objects on the site emphasize active learning and

student inquiry and require higher-order thinking, that is, analysis, synthesis, and evaluation. Contributions are shared under a Creative Commons license *(3)* to facilitate adoption and adaptation by the community. Creative Commons is a free licensing tool that allows authors to specify their own copyright terms and indicate how others may use and modify their creations. VIPEr also provides educators with a more direct link between teaching resources and current topics in inorganic chemistry. While textbooks and laboratory manuals do their best to incorporate modern research, change in these media is incremental and moves at a slower pace than research. Examples of teaching with new research developments can immediately be posted onto VIPEr and put into practice by the wider community.

VIPEr is much more than a structured repository of learning objects, because it integrates social networking tools including rating, commenting, polls, and forums. Through these features, community members can interact on teaching and research issues in inorganic chemistry. The forums, in particular, provide a great way to ask questions and get input on teaching and research ideas; users ask anything from "How do you effectively teach laboratory report writing?" to "How air sensitive is tris(triphenylphosphine)ruthenium(II) dichloride?" Not only can users download learning objects, but they can also provide feedback on how they have used a learning object and how it has worked in their classrooms. They can also contribute their own favorite learning objects to the site.

Since its launch in March 2008, VIPEr has become a vibrant Web site with participation by over 250 inorganic chemistry faculty from around the world. Through the efforts of this community, VIPEr is currently a repository of over 100 individual learning objects, many of which are based on recent developments in the literature. The forums have attracted over 300 posts. The site continues to grow both as a repository and as a community hub.

JCE VIPEr: An Inorganic Teaching and Learning Community

The goal of *JCE* VIPEr is to highlight exemplary materials and best practices in teaching inorganic chemistry and to share knowledge about social networking tools for teaching and collaborating. In each column, we will publish abstracts of tested and community-reviewed learning objects written by the learning objects' author or an adopter who can comment on the implementation of the learning object in the classroom. The abstracts will be listed in the *JCE* table of contents. We will highlight a range of learning objects, including those that are based on current advances in the field of inorganic chemistry, are student centered, require higher levels of cognitive achievement, educate the community in discipline-specific teaching practices, or make use of emerging technologies to enhance student learning. Information about contributing to this column can be found in the online material.

Joining the Community

We encourage you to become a part of this community! The collective experience of the community can serve to enrich the inorganic chemistry classroom and laboratory experience for students and faculty. There are many ways that you can become involved.

- Register as a VIPEr user at the Web site *(1)* and request "faculty" status.
- Post or respond to user forums related to teaching, research, events, and opportunities in inorganic chemistry. Share your thoughts on topics ranging from what belongs in an inorganic chemistry course, to the "tricks" to make published inorganic chemistry labs work flawlessly, or to the care of instrumentation.
- Share links to and comment on your favorite Web sites that explore aspects of inorganic chemistry.
- Comment on your experiences using inorganic chemistry textbooks or write a review of your favorite book.
- Respond to a poll and learn what other inorganic faculty are thinking.
- Use or adapt existing learning objects in your courses and post comments related to your adoption experience.
- Contribute new learning objects based on your own classroom activities *(4, 5)*. We strongly encourage you to submit any practices, materials, and resources that you find useful in teaching inorganic chemistry. Small chunks of content are extremely valuable—they are easy to share and easy to use.

Welcome to *JCE* VIPEr: An Inorganic Teaching and Learning Community. We invite you to join this community of chemists working collaboratively to improve inorganic chemistry teaching. Come for the content and stay for the community!

Acknowledgments

IONiC acknowledges financial support from the Mellon Faculty Career Enhancement Initiative (Inter-institutional award), the National Institute for Technology and Liberal Education (NITLE) Western Region Instructional Innovation Award, and the National Science Foundation (DUE-0737030).

Note

1. Exam problems can only be viewed by registered and verified faculty users to prevent student access to this material.

Literature Cited

1. Virtual Inorganic Pedagogical Electronic Resource. *http://www.ionicviper.org* (accessed Mar 2009).
2. Communities of Practice. *http://www.ewenger.com/theory/index.htm* (accessed Mar 2009).
3. Creative Commons. *http://creativecommons.org* (accessed Mar 2009).
4. Contributing to VIPEr. *https://www.ionicviper.org/page/contributing-viper* (accessed Mar 2009).
5. Step by Step—How to Contribute a Learning Object to VIPEr. *https://www.ionicviper.org/page/step-step* (accessed Mar 2009).

Supporting *JCE Online* Material

http://www.jce.divched.org/Journal/Issues/2009/Jun/abs766.html

Abstract and keywords

Full text (PDF) with links to cited URLs

Supplement

Additional information about this column and guidelines for submission to *JCE* VIPEr: An Inorganic Teaching and Learning Community