

Bassam Z. Shakhashiri: Chemical demonstrations: a handbook for teachers of chemistry, Volume 5

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Foundations of Chemistry

Philosophical, Historical, Educational
and Interdisciplinary Studies of
Chemistry

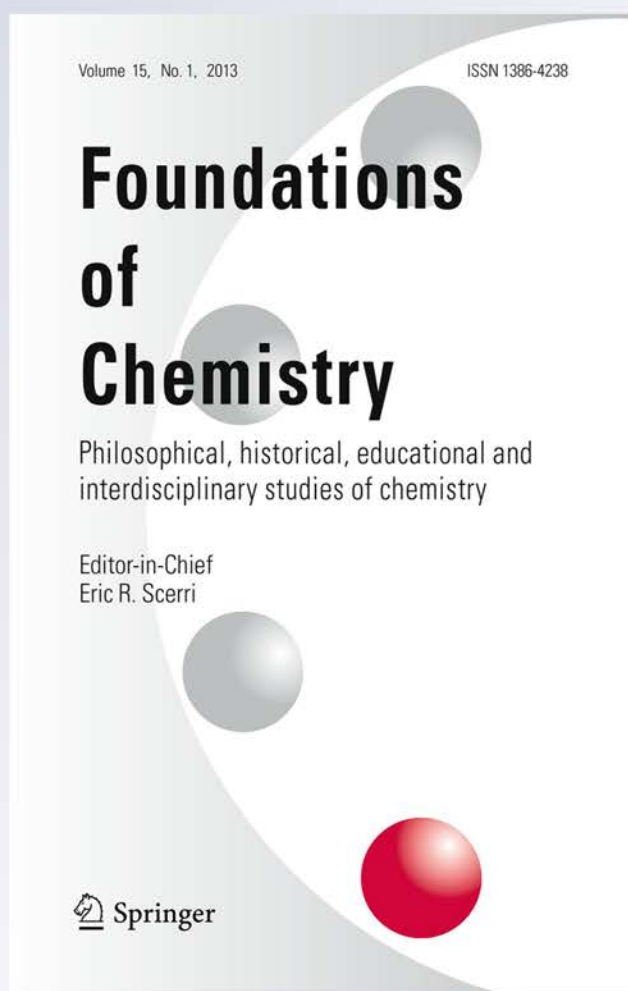
ISSN 1386-4238

Volume 15

Number 1

Found Chem (2013) 15:119-120

DOI 10.1007/s10698-011-9137-6



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University of Wisconsin Press, Madison, WI, 2011, xxiv + 323 pp, Color illustrations, ISBN: 978-0-29922650-3 (hardcover), \$45

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Published online: 8 November 2011
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Bassam Z. Shakhshiri, the Lebanese-born Professor of Chemistry, William T. Evjue Distinguished Chair for the Wisconsin Idea, Director, Wisconsin Initiative for Science Literacy, University of Wisconsin, Madison, and 2011 President-Elect, American Chemical Society, whose motto is “science is fun” (<http://www.scifun.org>), needs no introduction to chemical educators. In this long-awaited fifth volume in a “series of volumes aimed at providing teachers of chemistry at all educational levels with detailed instructions and background information for using chemical demonstrations in the classroom and in public lectures,” Bassam and his collaborators have provided those of us who regularly employ demonstrations in our courses with an attractive, oversized, copiously illustrated, meticulously documented, and well-planned source book.

These volumes, which I have characterized as “a series without peer,” differ from all other demonstration books in the wealth of detail given. Just as *Inorganic Syntheses* and *Organic Syntheses* contain stepwise directions spelling the difference between success and failure in preparative endeavors, so this series provides the crucial details often lacking in the genre of demonstrations.

This latest volume begins with a captivating seven-page essay, “Shining Light, Shedding Light,” by 1981 Nobel chemistry laureate Roald Hoffmann that delineates the special place of light absorption and emission in chemistry. In “Communicating Science via Demonstrations” (5 pp) Bassam discusses his pedagogic principles and thoughts on effective presentations and dispenses practical advice on how to use the book. “Sources Containing Descriptions of Lecture Demonstrations” (3 pp) and “Sources of Information on Hazards and Disposal” (1 p) list books and articles as recent as 2009. “Displaying Small Phenomena to a Large Audience” deals with methods for enlarging and projecting images (2 pp).

Color, light, vision, and perception are the topics of this volume, as well as the title of the 85-page introduction (by Rodney Schreiner, Jerry A. Bell, and Bassam) that addresses the scientific background for the 54 tested demonstrations and 83 different procedures that follow in one long chapter. The demonstrations are grouped into five sections: (1) The

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Production of Light (10 demonstrations; 39 pp); (2) Properties of Light (14 demonstrations; 50 pp); (3) Perception and Vision (10 demonstrations; 40 pp); (4) Photoemission: Fluorescence and Phosphorescence (7 demonstrations; 24 pp; the shortest section); and (5) Photochemistry (13 demonstrations; 62 pp; the longest section).

As in previous volumes, each of the demonstrations is divided into seven sections—(1) a brief summary; (2) a materials list; (3) a step-by-step account of the procedure, divided into preparation and presentation; (4) an explanation of the hazards involved; (5) information on how to store or dispose of the chemicals used; (6) a discussion of the phenomena displayed and principles illustrated; and (7) a list of references. Numerous numbered mathematical and chemical equations and tables are provided. An index to volumes 1–5 (12 double-column pages) is included.

Bassam maintains, “most classroom and public science demonstrations engage the brain through the eye and the ear, but very few involve olfaction, gustation, and touch.” He promises that future volumes will feature these topics. The first four volumes appeared within a few years of each other—Volume 1, 1983 (Kauffman 1985), Volume 2, 1985 (Kauffman 1986), Volume 3, 1989 (Kauffman 1990), and Volume 4, 1992 (Kauffman 1992), while the fifth volume appeared only after a 19-year gap. Let’s hope that future volumes appear more closely together and that our wait for Volume 6 is not a long one.

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