

# ***JOURNAL OF CHEMICAL EDUCATION***

## **CONTENIDO**

### **VOLUMEN 87 No. 1 JANUARY 2010**

#### **COVER**

The spice turmeric is yellow owing to the presence of the molecule curcumin. Dewprashad and Hadir (DOI: 10.1021/ed800014k) discuss an engaging and colorful demonstration that uses naturally occurring dyes from henna, turmeric, and rose petals that undergo pH-dependent structural and color changes. The demonstration illustrates the utility of resonance theory in predicting the relative acidities of alcohols. Molecules from this article are the JCE Featured Molecules (DOI: 10.1021/ed800038w) for this issue. Model of curcumin by William F. Coleman; photo of turmeric powder by Sanjay Acharya, <http://commons.wikimedia.org/wiki/file:Turmeric-powder.jpg>, licensed for use under Creative Commons Attribution-Share Alike 3.0; cover art by Betsy True.

#### **CHEMICAL EDUCATION TODAY**

##### **Editorial**

- ▲1 Old Proverbs and New Lessons.  
*Norbert J. Pienta.*

##### **Especially for high School Teachers.**

- ▲2 The Constant of Change.  
*Erica K. Jacobson and Laura E. Slocum.*

##### **Reports from Other Journals.**

- ▲3 Research Advances.  
*Angela G. King.*

##### **Reports from Other Journals.**

- ▲5 News from online.  
*Lynn Diener.*

##### **Instrumentation Topics for the Teaching Laboratory.**

- ▲8 Introduction to a New Column: Instrumentation Topics for the Teaching Laboratory.  
*Michelle M. Bushey.*

## **Chemical Education across Cultural and National.**

- ▲10 A Call for Contributions to Chemical Education across Cultural and National Borders.  
*Jonathan R. Hill.*

## **JCE in Transition.**

- ▲13 *JCE Editorial Staff.*

## **News & Announcements.**

- ▲15 January 2010 News & Announcements.

## **Letters**

- ▲17 Evolving Alchemy into Chemistry: No Longer a Dichotomy.  
*Pedro Cintas.*

## **Book & Media Reviews**

- ▲18 Book Review of Promoting Integrated and Transformative Assessment: A Deeper Focus on Student Learning.  
*Catherine M. Wehlburg.* Reviewed by *Scott Smidt.*

Book Review of Designing and Assessing Courses and Curricula: A Practical Guide.  
*Robert M. Diamond* Reviewed by *Scott Smidt.*

## **Book & Media Reviews**

- ▲19 Book Review of Whole-Class Inquiry: Creating Student-Centered Science Communities.  
*Dennis Smithenry and Joan Gallagher-Bolos* Reviewed by *Robert Mullins.*

## **Book & Media Reviews**

- ▲20 Book Review of Multiple Solution Methods for Teaching Science in the Classroom: Improving Quantitative Problem Solving Using Dimensional Analysis and Proportional Reasoning.  
*Stephen DeMeo* Reviewed by *James W. Jetter.*

## **Book & Media Reviews**

- ▲20 Book Review of Molecular Physical Chemical for Engineers.  
*John T. Yates, Jr. and J. Karl Johnson.* Reviewed by *Luanne Tilstra.*

## **CHEMICAL FOR EVERYONE**

- ▲22 **Award Address.**

You Can't Get There from Here.  
*A. H. Johnstone.*

- ▲30 One-Hundred Years of pH.  
*Rollie J. Myers.*

## IN THE CLASSROOM

### Terminology and Teaching

- ▲33 You Said "Neutral", but What Do You Mean?  
*Paul G. Jasien.*

### Terminology and Teaching.

- ▲35 Mission Statement for the New Column, Terminology and Teaching.  
*Paul G. Jasien.*

### Tested Demo.

- ▲36 Developing an Invisible Message about Relative Acidities of Alcohols in the Natural Products Henna, Turmeric, Rose Petals, and Vitamin A.  
*Brahmadeo Dewprashad\* and Latifa Hadir.*

- 40 The Properties of Oxygen Investigated with Easily Accessible Instrumentation.  
*Manfred Adelhelm, Natasha Aristov, and Achim Habekost\*.*

### Advanced Chemistry Classroom and Laboratory.

- 45 The Elusive Excited Quintet  $^5D$  of Tb (III): A Source of Luminescence and Resonance Energy Transfer in Terbium Compounds.  
*Kamil Klier.*

- ▲47 Using a Tablet PC and OneNote 2007 to Teach Chemistry.  
*Daniel C. Tofan.*

- ▲49 Efficacy of Using Learning Communities To Improve Core Chemistry Education and Increase Student Interest and Retention in Chemistry.  
*Windy de Prophetis Dricoll,\* Maria Gelabert, and Nicholas Richardson.*

- ▲54 Using Chem-Wiki To Increase Student Collaboration through Online Lab reporting.  
*Edward W. Elliott III and Ana Fraimen\*.*

- 57 Constructing the Components of a Lab Reporting.  
*David E. Berry\* and Kelli L. Fawkes.*

- ▲62 Developing Technical Writing Skills in the Physical Chemistry Laboratory: A Progressive Approach Employing Peer Review.

*Derek E. Gragson and John P. Hagen.*

- 66 **Green Chemistry.**  
Organic Process Technology Valuation: Cyclohexanone Oxime Syntheses.  
*Kevin C. Cannon and Maureen P. Breen.*

## IN THE LABORATORY

- ▲69 Mini-Lab Activities: Inquiry-Based Lab Activities for Formative Assessment.  
*Daniel Branan\* and Matt Morgan.*
- 73 IR Cards: Inquiry-Based Introduction to Infrared Spectroscopy.  
*Jacqueline Bennett\* and Tabatha Forster.*
- ▲78 Wash Bottle Laboratory Exercises: Iodide-Catalyzed H<sub>2</sub>O<sub>2</sub> Decomposition Reaction Kinetics Using the Rate Approach.  
*Rebecca Barlag\* and Frazier Nyasulu.*
- 81 Synthesis of 2,5-Dichloro-2,5-dimethylhexane by an S<sub>N</sub>1 Reaction.  
*Carl E. Wagner\* and Pamela A. Marshall.*
- 84 Microwave-Enhanced Organic Syntheses for the Undergraduate Laboratory: Diels — Alder Cycloaddition, Wittig Reaction, and Williamson Ether Synthesis.  
*Marsha R. Baar,\* Danielle Falcone, and Christopher Gordon.*
- 87 Automated Combinatorial Chemistry in the Organic Chemistry Majors Laboratory.  
*Christopher J. Nichols\* and Larry F. Hanne.*

## RESEARCH: SCIENCE AND EDUCATION

- 91 Developing Learning Objectives and Assessment Plans at a Variety of Institutions: Examples and Case Studies.  
*Marcy H. Towns.*
- ▲97 **Chemical Education Research.**  
Classifying End-of-Chapter Questions and Problems for Selected General Chemistry Textbooks Used in the United States.  
*Kariluz Dávila and Vicente Talanquer\*.*
- ▲102 **Chemical Education Research.**  
A comparative Study of French and Turkish Students' Ideas—Base Reactions.  
*Aytekin Cokelez.*
- ▲107 **Chemical Education Research.**  
“Gone” into solution: Assessing the Effect of Hands-On Activity on Students' comprehension of Solubility.  
*Laura B. Bruck, Aaron D. Bruck, and Amy J. Phelps\*.*

- ▲113 **Chemical Education Research.**  
An Analysis of Undergraduate General Chemistry Students' Misconceptions  
of the Submicroscopic Level of Precipitation Reactions.  
*Resa M. Kelly,\* Juliet H. Barrera, and Saheed C. Mohamed.*

**ON THE WEB**

- ▲119 **JCE Featured Molecule**  
Molecular Models of Natural Acid–Base Indicators.  
*William F. Coleman.*

■ Supporting Information is available free via the Internet at  
<http://pubs.acs.org>

▲ Articles of special interest to high school teachers.