ON THE COVER: Biorefineries—as industrial manifestations of a sustainable, biobased economy—incorporate essential principles of green chemistry and aim to eliminate dependence on petroleum and its derivatives to produce fuels, energy, and value-added products. It is critical for students to understand that large-scale conversions of biomass into a spectrum of value-added products would have a positive significant effect on a sustainable future. In the article, "Sweet and Sustainable: Teaching the Biorefinery Concept through Biobased Gelator Synthesis" (DOI: 10.1021/ed3007764), Hyeondo Luke Hwang, Swapnil Rohidas Jadhav, Julian Robert Silverman, and George John discuss biorefineries and describe an experiment that incorporates catalysis, soft materials, and renewable resources to connect students to an industrial concept in the teaching laboratory. Students gain a heightened sense of the current and future impact of biorefineries by practicing a small-scale, biobased organic synthesis, in which the translational aspects from organic synthesis to material synthesis are clear.

Editorial

dx.doi.org/10.1021/ed5007458
Experimenting with the Sweet Side of Chemistry: Connecting Students and Science through Food Chemistry
Sally B. Mitchell*

Book and Media Reviews

dx.doi.org/10.1021/ed500582x
Review of The Chemistry of Beer
Robert E. Buntrock* and Jason Bolton

dx.doi.org/10.1021/ed500513s
Review of Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society
Wheeler Conover*

dx.doi.org/10.1021/ed500529k
Review of Chemical Information for Chemists: A Primer
Robert E. Belford*

Articles

dx.doi.org/10.1021/ed5002009
Evidence-Based Approaches to Improving Chemical Equilibrium Instruction
Jodi L. Davenport, Gaea Leinhardt, James Greeno, Kenneth Koedinger, David Klahr, Michael Karabinos, and David J. Yaron*
Investigation of Absolute and Relative Scaling Conceptions of Students in Introductory College Chemistry Courses
Karrie Gerlach, Jaclyn Trate, Anja Blecking, Peter Geissinger, and Kristen Murphy*

Valid and Reliable Assessments To Measure Scale Literacy of Students in Introductory College Chemistry Courses
Karrie Gerlach, Jaclyn Trate, Anja Blecking, Peter Geissinger, and Kristen Murphy*

Investigating Quantum Mechanical Tunneling at the Nanoscale via Analogy: Development and Assessment of a Teaching Tool for Upper-Division Chemistry
Marc N. Muniz* and Maria T. Oliver-Hoyo

Spectroscopic and Physical Characterization of Functionalized Au Nanoparticles: A Multiweek Experimental Project
Jean-François Masson* and Hélène Yockell-Lelièvre

Sweet and Sustainable: Teaching the Biorefinery Concept through Biobased Gelator Synthesis
Hyeondo Luke Hwang, Swapnil Rohidas Jadhav, Julian Robert Silverman, and George John*

SoEn for a Sustainable Future: Developing and Teaching a Multidisciplinary Course on Solar Energy To Further Sustainable Education in Chemistry
Sonja Pullen and Katharina Brinkert*

Paper to Plastics: An Interdisciplinary Summer Outreach Project in Sustainability
Fiona Tamburini, Thomas Kelly, Eranthie Weerapana,* and Jeffery A. Byers*

Conflicts in Chemistry: The Case of Plastics, A Role-Playing Game for High School Chemistry Students
Deborah H. Cook*

Using the Socioscientific Context of Climate Change To Teach Chemical Content and the Nature of Science
Charity Flener-Lovitt*
1594 dx.doi.org/10.1021/ed400715s
iTUBE, YouTube, WeTUBE: Social Media Videos in Chemistry Education and Outreach
David K. Smith*

1600 dx.doi.org/10.1021/ed500050d
Enhancing Graduate Student Communication to General Audiences through Blogging about Nanotechnology and Sustainability
Lee M. Bishop, Ayesha S. Tillman, Franz M. Geiger, Christy L. Haynes, Rebecca D. Klaper, Catherine J. Murphy, Galya Orr, Joel A. Pedersen, Lizzanne DeStefano, and Robert J. Hamers*

1606 dx.doi.org/10.1021/ed400617r
Graduate Student Outreach: Model of a One-Day "Chemistry Camp" for Elementary School Students
Joseph D. Houck,* Natalie K. Machamer,* and Karla A. Erickson*

1611 dx.doi.org/10.1021/ed400495m
Offering Community Engagement Activities To Increase Chemistry Knowledge and Confidence for Teachers and Students
Joyce D. Sewry,* Sarah R. Glover, Timothy G. Harrison, Dudley E. Shallcross, and Kenneth M. Ngcoza

1618 dx.doi.org/10.1021/ed400533r
Cooperative and Inquiry-Based Learning Utilizing Art-Related Topics: Teaching Chemistry to Community College Nonscience Majors
Tiranda Hemraj-Benny* and Ian Beckford

1623 dx.doi.org/10.1021/ed300557r
Making Sense of Olive Oil: Simple Experiments To Connect Sensory Observations with the Underlying Chemistry
Richard A. Blatchly, Zeynep Delen, and Patricia B. O'Hara*

1631 dx.doi.org/10.1021/ed4003404
Design of a Food Chemistry-Themed Course for Nonscience Majors
Patrice Bell*

1637 dx.doi.org/10.1021/ed5003256
Laboratory Development and Lecture Renovation for a Science of Food and Cooking Course
Deon T. Miles* and Adrienne C. Borchardt

1643 dx.doi.org/10.1021/ed400671y
Jonathan K. Meyers, Tyler W. LeBaron, and David C. Collins*
Comprehensive Approach to the Development of Communication and Critical Thinking: Bookend Courses for Third- and Fourth-Year Chemistry Majors
Geoffrey C. Klein and Jeffrey M. Carney*

Camping Burner-Based Flame Emission Spectrometer for Classroom Demonstrations
Bastien Néel, Gastón A. Crespo, Didier Perret, Thomas Cherubini, and Eric Bakker*

Managing Auditory Risk from Acoustically Impulsive Chemical Demonstrations
Jeffrey H. Macedone,* Kent L. Gee, and and Julia A. Vernon

Activities

Polymer Basics: Classroom Activities Manipulating Paper Clips To Introduce the Structures and Properties of Polymers
Yunusa Umar*

Exploring pH-Sensitive Hydrogels Using an Ionic Soft Contact Lens: An Activity Using Common Household Materials
Yueh-Huey Chen,* Yu-Chi He, and Jing-Fun Yaung

Demonstrations

Music Generated by a Zn/Cu Electrochemical Cell, a Lemon Cell, and a Solar Cell: A Demonstration for General Chemistry
Susan G. Cady*

Laboratory Experiments

Identification of Paper by Stationary Phase Performance
Michael J. Smith,* Ilda C. Vale, and Fiona M. Gray

Spectroscopy of Sound Transmission in Solid Samples
Dean J. Campbell,* Joshua P. Peterson, and Tamara J. Fitzjarrald
Soybean Oil: Powering a High School Investigation of Biodiesel
Paul De La Rosa, Katherine A. Azurin, and Michael F. Z. Page*

Biodiesel from Seeds: An Experiment for Organic Chemistry
Steven W. Goldstein*

A Teaching Laboratory for Comprehensive Lipid Characterization from Food Samples
Kestutis Bendinskas,∗ Benjamin Weber, Tamara Nsouli, Hoangvy V. Nguyen, Carolyn Joyce, Vadoud Niri, and Thorsten W. Jaškolla

Extraction and 1H NMR Analysis of Fats from Convenience Foods: A Laboratory Experiment for Organic Chemistry
Aaron M. Hartel* and Amy C. Moore

Microwave-Assisted Esterification: A Discovery-Based Microscale Laboratory Experiment
Maureen K. Reilly, Ryan P. King, Alexander J. Wagner, and Susan M. King*

Microwave Synthesis of Zinc Hydroxy Sulfate Nanoplates and Zinc Oxide Nanorods in the Classroom
Rafal M. Dziedzic,∗ Anne Lynn Gillian-Daniel, Greta M. Petersen, and Kermin J. Martinez-Hernández*

Microwave-Assisted Synthesis of Red-Light Emitting Au Nanoclusters with the Use of Egg White
Jinghan Tian, Lei Yan, Aohua Sang, Hongyan Yuan, Baozhan Zheng, and Dan Xiao*

Pedagogical Comparison of Five Reactions Performed under Microwave Heating in Multi-Mode versus Mono-Mode Ovens: Diels–Alder Cycloaddition, Wittig Salt Formation, E2 Dehydrohalogenation To Form an Alkyne, Williamson Ether Synthesis, and Fischer Esterification
Marsha R. Baar,* William Gammerdinger, Jennifer Leap, Erin Morales, Jonathan Shikora, and Michael H. Weber

Identification of Synthetic Polymers and Copolymers by Analytical Pyrolysis—Gas Chromatography/Mass Spectrometry
Peter Kusch*