

contents

May 2015 • Vol. 94 No. 4

feature articles

Chalcogenide glass microphotonics: Stepping into the spotlight 24

Juejun Hu, Lan Li, Hongtao Lin, Yi Zou, Qingyang Du, Charmayne Smith, Spencer Novak, Kathleen Richardson, and J. David Musgraves

Integrated photonics on flexible substrates and on-chip infrared spectroscopic sensing expand new applications for chalcogenide glasses beyond phase change data storage and moldable infrared optics.

An analysis of glass-ceramic research and commercialization 30

Maziar Montazerian, Shiv Prakash Singh, and Edgar Dutra Zanotto

Distinct properties of glass-ceramics give them unique applications in domestic, space, defense, health, electronics, architecture, chemical, energy, and waste management.

Peering into the past: What early telescopes reveal about glass technology and scientific evolution 36

April Gocha

Corning Museum of Glass curator Marvin Bolt discusses how studying early telescopes provides a glimpse into the evolution of science, birth of glass science, and world history.

Nonlinear elasticity of silica fibers studied by in-situ Brillouin light scattering in two-point bend test 40

Michael Guerette and Liping Huang

In-situ Brillouin light-scattering shows that an expression including the fifth-order term is required to capture both minimum in compression and maximum in tension in the elastic modulus of silica glass.

meetings

GOMD-DGG 2015: Glass & Optical Materials Division and Deutsche Glastechnische Gesellschaft Joint Meeting 44

11th CMCEE: International Conference on Ceramic Materials and Components for Energy and Environmental Applications 46

6th Advances in Cement-based Materials 48

Meeting highlights: ACerS St. Louis Section/Refractory Ceramics Division's 51st Annual Symposium 49

columns

Deciphering the Discipline 56

Peter Robinson

Industry or research? Engineering alternative commercial careers

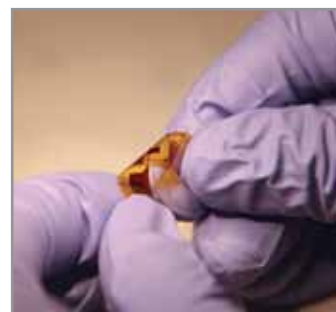
resources

New Products 50

Calendar 52

Classified Advertising 53

Display Advertising Index 55



cover story

Chalcogenide glass microphotonics: Stepping into the spotlight

Credit: Juejun Hu

– page 24



feature

An analysis of glass-ceramic research and commercialization

Credit: Schott North America

– page 30

departments

News & Trends 3

ACerS Spotlight 10

Ceramics in Energy 15

Ceramics in the Environment 16

Advances in Nanomaterials 17

Research Briefs 18

Editorial and Production

Eileen De Guire, Editor
ph: 614-794-5828 fx: 614-794-5815
edeguire@ceramics.org

April Gocha, Associate Editor
Jessica McMathis, Associate Editor
Russell Jordan, Contributing Editor
Tess Speakman, Graphic Designer

Editorial Advisory Board

Finn Giuliani, Chair, Imperial College London
G. Scott Glaesemann, Corning Incorporated
John McCloy, Washington State University
C. Scott Nordahl, Raytheon Company
Fei Peng, Clemson University
Rafael Salomão, University of São Paulo
Eileen De Guire, Staff Liaison, The American Ceramic Society

Customer Service/Circulation

ph: 866-721-3322 fx: 240-396-5637
customerservice@ceramics.org

Advertising Sales

National Sales

Mona Thiel, National Sales Director
mthiel@ceramics.org
ph: 614-794-5834 fx: 614-794-5822

Europe

Richard Rozelaar
media@alaincharles.com
ph: 44-(0)-20-7834-7676 fx: 44-(0)-20-7973-0076

Executive Staff

Charles Spahr, Executive Director and Publisher
cspahr@ceramics.org
Teresa Black, Director of Finance and Operations
tblack@ceramics.org
Eileen De Guire, Director of Communications & Marketing
edeguire@ceramics.org
Marcus Fish, Development Director
Ceramic and Glass Industry Foundation
mfish@ceramics.org
Sue LaBute, Human Resources Manager & Exec. Assistant
slabute@ceramics.org
Mark Mecklenborg, Director of Membership, Meetings
& Technical Publications
mmecklenborg@ceramics.org

Officers

Kathleen Richardson, President
Mrityunjay Singh, President-Elect
David Green, Past President
Daniel Lease, Treasurer
Charles Spahr, Secretary

Board of Directors

Michael Alexander, Director 2014-2017
Keith Bowman, Director 2012-2015
Geoff Brenneka, Director 2014-2017
Elizabeth Dickey, Director 2012-2015
John Halloran, Director 2013-2016
Vijay Jain, Director 2011-2015
Edgar Lara-Curzio, Director 2013-2016
Hua-Tay (H.T.) Lin, Director 2014-2017
Tatsuki Ohji, Director 2013-2016
David Johnson Jr., Parliamentarian

Connect with ACerS online!



<http://bit.ly/acerstwitter>



<http://bit.ly/acerslink>



<http://bit.ly/acersgplus>



<http://bit.ly/acersfb>



<http://bit.ly/acersrss>



In your hand and on the go!

There are now three great ways to read all of the good stuff inside this month's issue of the *Bulletin*!

On-the-go option #1: Download the app from the Google Play store (Android tablet and smartphones) or the App Store (iOS tablets only).

Equally mobile option #2: Download a PDF copy of this month's issue at ceramics.org and save it to your smartphone, tablet, laptop, or desktop.

Optimized for laptop/desktop option #3: From your laptop or desktop, flip through the pages of this month's electronic edition at ceramics.org.



Want more ceramics and glass news throughout the month?

Subscribe to our e-newsletter, *Ceramic Tech Today*, and receive the latest ceramics, glass, and Society news in your inbox each Tuesday, Wednesday, and Friday. Sign up at <http://bit.ly/acersctt>.

Top Tweets

 Have you connected with @acersnews on Twitter? Here are some recent top posts:

Star power

Check out ACerS member Valerie Wiesner in this Women's History Month profile from @NASA!
<http://bit.ly/1FezckH>



Supersonic security

Glass fibers weave ballistic panels to protect supersonic vehicle from @MorganAdvanced
<http://bit.ly/1O5RBnR>



At least you're getting paid?

The top 10 worst jobs in science (via @PopSci)
<http://bit.ly/1E5icLa>

American Ceramic Society Bulletin covers news and activities of the Society and its members, includes items of interest to the ceramics community, and provides the most current information concerning all aspects of ceramic technology, including R&D, manufacturing, engineering, and marketing. *American Ceramic Society Bulletin* (ISSN No. 0002-7812). ©2015. Printed in the United States of America. *ACerS Bulletin* is published monthly, except for February, July, and November, as a "dual-media" magazine in print and electronic formats (www.ceramicbulletin.org). Editorial and Subscription Offices: 600 North Cleveland Avenue, Suite 210, Westerville, OH 43082-6920. Subscription included with The American Ceramic Society membership. Nonmember print subscription rates, including online access: United States and Canada, 1 year \$135; international, 1 year \$150.* Rates include shipping charges. International Remail Service is standard outside of the United States and Canada. *International nonmembers also may elect to receive an electronic-only, email delivery subscription for \$100. Single issues, January-October/November: member \$6 per issue; nonmember \$15 per issue. December issue (ceramicSOURCE): member \$20, nonmember \$40. Postage/handling for single issues: United States and Canada, \$3 per item; United States and Canada Expedited (UPS 2nd day air), \$8 per item; International Standard, \$6 per item.

POSTMASTER: Please send address changes to American Ceramic Society Bulletin, 600 North Cleveland Avenue, Suite 210, Westerville, OH 43082-6920. Periodical postage paid at Westerville, Ohio, and additional mailing offices. Allow six weeks for address changes.

ACSB7, Vol. 94, No. 4, pp 1-56. All feature articles are covered in Current Contents.