

contents

June/July 2017 • Vol. 96 No.5

feature articles



3

President's update: ACerS Young Members

ACerS President Bill Lee provides the second of three updates to members about key themes of his presidency.

by Bill Lee



20

Cover screens for personal electronic devices: Strengthened glass or sapphire?

A review of material manufacturing and article fabrication processes and costs for strengthened glass and sapphire crystal materials for smartphone cover screens.

by Arun K. Varshneya and Peter P. Bihuniak



26

Simple methods to incorporate silver and copper generate antimicrobial glasses and porous glass-bonded ceramics

Simple and flexible techniques show promise for incorporating silver and copper into glass and glass-bonded ceramic materials for novel antimicrobial products.

by Taki Negas, Dave Hilfiker, and Scott Bartkowski



34

ACerS Bulletin annual student section

Student-written articles showcase the diversity and impact of research from students around the world.

Chair's update on PCSA activities and welcome to the student ACerS Bulletin issue

by Tessa Davey

Congressional Visits Day 2017 recap

by Tricia L. Freshour

Calcium silicate, carbon dioxide, and political climate change: Assessing the viability of environmentally friendly cement alternatives

by Ryan Anderson

Filling cracks of the foundation: Why K-12 outreach should be a priority

by Haley Barnes

Synergy and collaboration: Conduct your research and business like concrete

by Jindaporn Juthapakdeeprasert

Ceramic technology for cleaner water in Africa: When academia meets imagination

by Wirat Lerdprom

departments

News & Trends	5
Spotlight	10
Ceramics in Biomedicine	16
Research Briefs	18

columns

Business and Market View	48
<i>Ceramic matrix composites and carbon matrix composites market projected to grow at a fairly rapid pace</i>	
by Margareth Gagliardi	

meetings

CBLS/CEX 2017 recap	40
Cements 2017	41
MS&T17	42

resources

Calendar	44
Classified Advertising	45
Display Ad Index	47

Corrections to the May issue of the ACerS Bulletin

"Lighter, tougher, and optically advantaged: How an innovative combination of materials can enable better car windows today," p. 20. The print edition of the article featured unauthorized use of a Ford GT as the article's lead image. Digital versions of the article have been corrected.

ACerS Spotlight, p. 8. Bikramjit Basu's award was reported incorrectly. The correct award is printed on page 12.

Editorial and Production

Eileen De Guire, Editor

ph: 614-794-5828 fx: 614-794-5815
edeguire@ceramics.org

April Gocha, Managing Editor

Faye Oney, Assistant Editor

Russell Jordan, Contributing Editor

Tess Speakman, Graphic Designer

Editorial Advisory Board

Thomas Fischer, University of Cologne, Germany

John McCloy, Chair, Washington State University

Fei Peng, Clemson University

Klaus-Markus Peters, Fireline Inc.

Gurpreet Singh, Kansas State University

Chunlei Wan, Tsinghua University, China

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

Eileen De Guire, Director of Communications & Marketing

edeguire@ceramics.org

Marcus Fish, Development Director

Ceramic and Glass Industry Foundation

mfish@ceramics.org

Michael Johnson, Director of Finance and Operations

mjohnson@ceramics.org

Sue LaBute, Human Resources Manager & Exec. Assistant

slabute@ceramics.org

Mark Mecklenborg, Director of Membership, Meetings

& Technical Publications

mmecklenborg@ceramics.org

Kevin Thompson, Director, Membership

kthompson@ceramics.org

Officers

William Lee, President

Michael Alexander, President-Elect

Mrityunjay Singh, Past President

Daniel Lease, Treasurer

Charles Spahr, Secretary

Board of Directors

Michael Alexander, Director 2014-2017

Geoff Brennecka, Director 2014-2017

Manoj Choudhary, Director 2015-2018

Doreen Edwards, Director 2016-2019

Dana Goski, Director 2016-2019

Martin Harmer, Director 2015-2018

Hua-Tay (H.T.) Lin, Director 2014-2017

Lynette Madsen, Director 2016-2019

Gregory Rohrer, Director 2015-2018

David Johnson Jr., Parliamentarian



<http://bit.ly/acerstwitter>



<http://bit.ly/acerslink>



<http://bit.ly/acersgplus>



<http://bit.ly/acersfb>



<http://bit.ly/acersrss>

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 straight to your inbox every Tuesday, Wednesday, and Friday! Sign up at <http://bit.ly/acersctt>.

As seen in the May 2017 ACerS Bulletin...



How an innovative combination of materials can enable better car windows today

In the highly competitive automotive marketplace, innovation has been a constant since Henry Ford rolled out his first Model T. Yet, automotive glass technology has remained relatively unchanged for almost a century—until now.

Read more at
www.ceramics.org/goinggorilla

As seen on Ceramic Tech Today...



3-D printing method uses extraterrestrial soil to cultivate Mars colonization

Researchers at Northwestern University have devised a technique to 3-D print extraterrestrial soil. Using a biologically derived binder, the team demonstrated that their unique method can 3-D print biodegradable tools, building blocks, and other structures.

Read more at
www.ceramics.org/mars

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.

ACSBA7, Vol. 96, No. 5, pp 1-48. All feature articles are covered in Current Contents.