

contents

April 2015 • Vol. 94 No. 3

feature articles

Growth in advanced ceramics market fueled by new applications 24

April Gocha

Advanced ceramics have attractive properties—including resistance to corrosion, heat, impact, and chemical attack—that make them competitive in a variety of markets.

Near net shaping of ceramic components— 'Plant tour' of a custom manufacturer 26

Thomas O. Henriksen

Automated near net shaping of custom ceramic parts saves time, material, and energy.

Why did it break?

38 years of teaching fractographers how to answer the question 32

George Quinn and James Varner

A historical perspective and closer look at Alfred University's fractography of glasses and ceramics short course, which has run continuously for nearly four decades.

Ceramic materials in pulp and paper manufacturing 36

Mahendra Patel

Many areas of paper manufacturing use alumina, silicon carbide, silicon nitride, composites, ceramic coatings, and other advanced ceramic components.

meetings

Ceramics Expo 2015 42

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

6th Advances in Cement-based Materials 47

11th CMCEE: International Conference on Ceramic Materials and Components for Energy and Environmental Applications 48

columns

Deciphering the Discipline 56

Kara Luitjohan

Engineering life lessons in emerging economies

resources

New Products 49

Calendar 52

Classified Advertising 53

Display Advertising Index 55



cover story

Near net shaping of ceramic components—'Plant tour' of a custom manufacturer

Credit: Ceramco

— page 26



feature

Why did it break? 38 years of teaching fractographers how to answer the question

Credit: G. Quinn and J. Varner

— page 32

departments

News & Trends 3

ACerS Spotlight 8

Ceramics in Energy 12

Ceramics in Environment 13

Research Briefs 16

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.

Get it on **GOOGLE PLAY** Available for iPad on the **App Store**

Credit: John Karakatsani

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:



Solar stores more sun

Highly conductive, undoped oxide film will help solar cells harness more sunlight
<http://bit.ly/1CBFuv0>



Simulating strength

New models show how atomic placement makes concrete strong
<http://bit.ly/1acw0u6>



Hoodie for the stars?

Glass-nanosphere-coated fabric provides shelter from the paparazzi
<http://bit.ly/1GxQpoa>

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). ©2014. 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. 3, pp 1–56. All feature articles are covered in Current Contents.