

THE WORLD RESOURCE FOR CERAMIC MANUFACTURING AND TECHNOLOGY

AMERICAN  
CERAMIC  
SOCIETY

# BULLETIN

March 2002

[www.ceramicbulletin.org](http://www.ceramicbulletin.org)

Ceramics for Ballistic  
Protection / 27

Market Analysis—  
Nanomaterials / 33

Glaze-Melting Behavior / 47

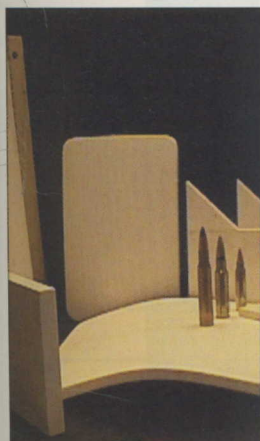
Determining Pore-Size  
Distribution / 52

Ref: PF 120201/05 Df: 27745090  
AMERICAN CERAMIC SOCIETY BULLETIN  
01.03.02 Vol. 81 No. 3  
0002-7812 22101144 12.03.02  
LIBRIS - C2  
144 BOULEVARD KRIM BELKACEM  
ALGER  
ALGERIE

# CONTENTS

Volume 81, Number 3, March 2002

## feature articles



Alumina Ceramics . . .



product focus . . .

### 21 Mechanical Properties and Bioactive Characteristics of Glass-Ceramics

*Crystallization behavior of  $\text{SiO}_2\text{-CaO-MgO}$  ( $\text{Na}_2\text{O}$ ) bulk glasses containing  $\text{WO}_3$  and  $\text{Fe}_2\text{O}_3$  nucleants was investigated. XRD results showed that the main crystalline phases in this system were wollastonite particles and diopside fibers, the latter of which increased its strength and toughness.*

P. Alizadeh and V.K. Marghussian

### 27 Alumina Ceramics for Ballistic Protection, Part I

*High-alumina and alumina-zirconia ceramics have been successfully used as armor material for personnel and vehicular ballistic protection.*

E. Medvedovski

### 33 Market Analysis of Nanostructured Materials

*The world market for nanoparticles is expected to increase markedly during the next several years.*

M.N. Rittner

### 39 Impact of Thermal Conductivity on Refractories

*An empirical model correlating thermal conductivity with volumetric bulk density and temperature for fireclay and alumina refractories has been developed.*

M.M. Akiyoshi, A.P. da Silva, M.G. da Silva and V.C. Pandolfelli

### 47 Characterizing Glaze-Melting Behavior via HSM

*Hot-stage microscopy has been used successfully to characterize glaze-melting behavior.*

M. Ahmed and D.A. Earl

### 52 Mercury Intrusion Porosimetry Determines Pore-Size Distribution

*A round-robin test with nine participating laboratories was performed as a prestandardization research program on a method for determining pore-size distribution of ceramic green bodies using mercury intrusion porosimetry.*

M. Oya, M. Takahashi, Y. Iwata, K. Jono, T. Hotta, H. Yamamoto, D. Washio, A. Suda, Y. Matuo, K. Tanaka and M. Morimoto

## manufacturing briefs

### 57 Conveyor Systems: Problems & Solutions

## product focus

### 44 Thermal Analysis

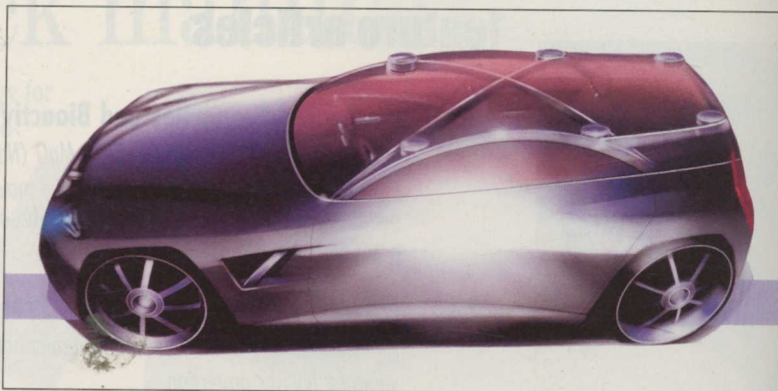


# CONTENTS

Volume 81, Number 3, March 2002

## news & views

- 9 **global news**  
*Zinc Oxide Nanoparticles/11*  
*Zemex Buys Attapulgitite Facility/14*
- 10 **technology briefs**  
Greg Geiger, Technical Editor
- 14 **refractory hot line**  
Charles G. Marvin, Contributing Editor
- 80 **editorial/last page**  
*For the Record*  
Patricia A. Janeway, Editor



global news . . .

## departments

- |                               |   |
|-------------------------------|---|
| 5 <b>calendar</b>             | 59 <b>online business directory</b>           |
| 12 <b>business stats</b>      | 63 <b>product news</b>                        |
| 16 <b>environmental notes</b> | 68 <b>business services</b>                   |
| 18 <b>ceramics online</b>     | 78 <b>career opportunities/classified ads</b> |
| 19 <b>names in the news</b>   | 79 <b>information please</b>                  |
| 37 <b>literature showcase</b> | 79 <b>ad index</b>                            |



product news . . .

## society business

- 60 **NICE news**  
Diane C. Folz, NICE Director
- 62 **members network**  
*Students Activities = Fun, Too*  
Garry Moon, Membership Manager

### ACerS Meeting Information

[www.ceramics.org](http://www.ceramics.org)

**ACerS 104th Annual Meeting  
and Exposition, St. Louis,  
April 28–May 1, 2002**

**ACerS 105th Annual Meeting  
and Exposition, Nashville,  
Tenn., April 27–30, 2003**

THE AMERICAN CERAMIC SOCIETY BULLETIN covers news and activities of the Society and its members, includes items of interest to the ceramic community, and provides the most current information concerning all aspects of ceramic technology, including research and development, manufacturing, engineering and marketing.

AMERICAN CERAMIC SOCIETY BULLETIN (ISSN No. 0002-7812). ©2002 PUBLISHED MONTHLY, 12 TIMES A YEAR. PRINTED IN THE UNITED STATES OF AMERICA.

EDITORIAL AND SUBSCRIPTION OFFICES: P.O. Box 6136, WESTERVILLE, OH 43086-6136. SUBSCRIPTION INCLUDED WITH AMERICAN CERAMIC SOCIETY MEMBERSHIP. NONMEMBER SUBSCRIBER RATES: NORTH AMERICA, 1-YEAR \$50; INTERNATIONAL (AIR MAIL ONLY), 1-YEAR \$100. BACK ISSUES: NORTH AMERICA, \$9 PER ISSUE; INTERNATIONAL, \$12 PER ISSUE. ALL RATES INCLUDE SHIPPING CHARGES. OUR STANDARD DELIVERY METHOD OUTSIDE NORTH AMERICA IS VIA BULK AIR MAIL PROVIDED BY AN INTERNATIONAL RE-MAIL CARRIER.

POSTMASTER: PLEASE SEND ADDRESS CHANGES TO AMERICAN CERAMIC SOCIETY BULLETIN, P.O. Box 6136, WESTERVILLE, OH 43086-6136. PERIODICAL POSTAGE PAID AT WESTERVILLE, OHIO, AND ADDITIONAL MAILING OFFICES. ALLOW SIX WEEKS FOR ADDRESS CHANGES.

ACSBA7, Vol. 81, No. 3, pp 1–80