

Elements

An International Magazine of Mineralogy, Geochemistry, and Petrology



ABOUT THE COVER:
Volcanic corestones weathering spheroidally on Culebra Island, Puerto Rico. The Critical Zone is a term coined to describe the zone where rock meets life. It extends from the outer limits of the vegetation canopy to the lower limits of groundwater. Chemical, physical, and biological processes occurring within this zone control the development of soils and ecosystems. PHOTO R. FLETCHER

Volume 3, Number 5 • October 2007

Elements is published jointly by the Mineralogical Society of America, the Mineralogical Society of Great Britain and Ireland, the Mineralogical Association of Canada, the Geochemical Society, The Clay Minerals Society, the European Association for Geochemistry, the International Association of GeoChemistry, the Société Française de Minéralogie et de Cristallographie, the Association of Applied Geochemists, the Deutsche Mineralogische Gesellschaft, the Società Italiana di Mineralogia e Petrologia, the International Association of Geoanalysts, and the Polskie Towarzystwo Mineralogiczne (Mineralogical Society of Poland). It is provided as a benefit to members of these societies.

Elements is published six times a year. Individuals are encouraged to join any one of the participating societies to receive *Elements*. Institutional subscribers to any of the following journals—*American Mineralogist*, *Clay Minerals*, *Clays and Clay Minerals*, *MINABS Online*, *Mineralogical Magazine*, and *The Canadian Mineralogist*—will also receive *Elements* as part of their 2007 subscription. Institutional subscriptions are available for US\$125 a year in 2007. Contact the managing editor (tremlp@ete.inrs.ca) for information.

Copyright 2007 by the Mineralogical Society of America

All rights reserved. Reproduction in any form, including translation to other languages, or by any means—graphic, electronic or mechanical, including photocopying or information storage and retrieval systems—without written permission from the copyright holder is strictly prohibited.

Publications mail agreement no. 40037944

Return undeliverable
Canadian addresses to:
PO Box 503
RPO West Beaver Creek
Richmond Hill, ON L4B 4R6

Printed in Canada
ISSN 1811-5209 (print)
ISSN 1811-5217 (online)

www.elementsmagazine.org

The Critical Zone: Where Rock Meets Life

Susan L. Brantley, Timothy S. White, and K. Vala Ragnarsdottir, Guest Editors



307

Crossing Disciplines and Scales to Understand the Critical Zone

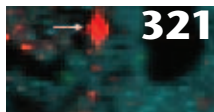
Susan L. Brantley, Martin B. Goldhaber, and K. Vala Ragnarsdottir



315

Physical and Chemical Controls on the Critical Zone

Suzanne Prestrud Anderson, Friedhelm von Blanckenburg, and Arthur F. White



321

Soil Biogeochemical Processes within the Critical Zone

Jon Chorover, Ruben Kretzschmar, Ferran Garcia-Pichel, and Donald L. Sparks



327

Coupling between Biota and Earth Materials in the Critical Zone

Ronald Amundson, Daniel D. Richter, Geoff S. Humphreys, Esteban G. Jobbágy, and Jérôme Gaillardet



333

Contributions from Earth's Atmosphere to Soil

Louis A. Dery and Oliver A. Chadwick

Departments

| | |
|---|------------|
| Editorial – Fairness in Evaluation | 299 |
| Triple Point – The Extinction of Geology | 301 |
| People in the News | 302 |
| Meet the Authors | 303 |
| Society News | 339 |
| Mineralogical Society of Poland | 339 |
| Società Italiana di Mineralogia e Petrologia | 340 |
| International Association of GeoChemistry | 341 |
| Mineralogical Society of Great Britain and Ireland | 342 |
| Mineralogical Association of Canada | 344 |
| Association of Applied Geochemists | 346 |
| Mineralogical Society of America | 348 |
| The Clay Minerals Society | 350 |
| Geochemical Society | 352 |
| European Association for Geochemistry | 355 |
| Deutsche Mineralogische Gesellschaft | 356 |
| Société Française de Minéralogie et de Cristallographie | 357 |
| International Association of Geoanalysts | 358 |
| International Mineralogical Association | 359 |
| Mineral Matters – Missing Minerals | 360 |
| Book Reviews | 361 |
| Conference News – Frontiers Meeting | 362 |
| Travelogue – Roaming the Scottish Highlands | 364 |
| Calendar | 366 |
| Parting Shots | 367 |
| Advertisers in this Issue | 365 |

