

SCIENCE

1276

Physicists dig for answers



NEWS & COMMENT

- Mars Observer's Costly Solitude** 1264
The Sounds of Silence: Chronology of Despair
How Observer Became a 'Billion-Dollar Mission'
NASA's Troubles Come in Drove
- 'Greener' Military Pays Off for Civilian Scientists** 1268
A Different Kind of Grants Program
- A Heavy Ion Accelerator Gears Up to Fight Cancer** 1270

RESEARCH NEWS

- Plastics That Play on Light** 1272
- Evolution's Big Bang Gets Even More Explosive** 1274
- Light Microscopes Get a Sharper Look** 1275
- Gran Sasso: Particle Physics Without Mountains of Money** 1276

PERSPECTIVE

- Cholesterol and the Golgi Apparatus** 1280
M. S. Bretscher and S. Munro

ARTICLES

- Rhenium-Osmium Evidence for Regional Mineralization in Southwestern North America** 1282
T. E. McCandless and J. Ruiz
- Crystallization at Inorganic-Organic Interfaces: Biominerals and Biomimetic Synthesis** 1286
S. Mann, D. D. Archibald, J. M. Didymus, T. Douglas, B. R. Heywood, F. C. Meldrum, N. J. Reeves

DEPARTMENTS

- THIS WEEK IN SCIENCE** 1253
- EDITORIAL** 1255
Power from Wind Turbines
- LETTERS** 1257
Genetics and Male Sexual Orientation:
A. Fausto-Sterling and E. Balaban; R. Diamond;
D. Hamer, S. Hu, V. Magnuson, N. Hu,
A. Pattatucci
- SCIENCESCOPE** 1263

- RANDOM SAMPLES** 1271
State Backs Breast Cancer Research • Flood
Uproots Transgenic Crop • Good Chemistry at
Electronic Conference • Processing the New Coke
Fiasco
- BOOK REVIEWS** 1336
Science in Russia and the Soviet Union, reviewed by
A. Kojevnikov • *History and Origins of Cryogenics
and Superconductivity*, K. Gavroglu • Vignettes •
Books Received
- PRODUCTS & MATERIALS** 1341

Board of Reviewing Editors

John Abelson
Frederick W. Alt
Don L. Anderson
Michael Ashburner
Stephen J. Benkovic
David E. Bloom
Floyd E. Bloom
Piet Borst
Michael S. Brown
Henry R. Bourne
James J. Bull

Kathryn Calame
C. Thomas Caskey
Dennis W. Choi
John M. Coffin
Paul J. Crutzen
Robert Desimone
Nicole Le Douarin
Bruce F. Eldridge
Paul T. Englund
Richard G. Fairbanks
Douglas T. Fearon

Harry A. Fozzard
K. Friedrich
Theodore H. Geballe
Margaret J. Geller
John C. Gerhart
Roger I. M. Glass
Stephen P. Goff
Peter N. Goodfellow
Corey S. Goodman
Stephen J. Gould
Ira Herskowitz

Eric F. Johnson
Stephen M. Kosslyn
Michael LaBarbera
Charles S. LeVings III
Alexander Levitzki
Harvey F. Lodish
Richard Losick
Diane Mathis
Anthony R. Means
Shigetada Nakanishi
Roger A. Nicol

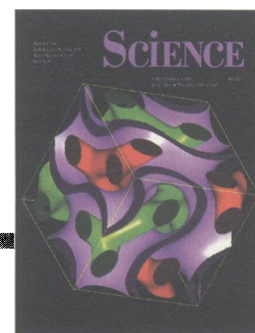
William H. Orme-
Johnson III
Stuart L. Pimm
Yeshayau Pocker
Dennis A. Powers
Ralph S. Quatranio
V. Ramanathan
Douglas C. Rees
T. M. Rice
Erkki Ruoslahti
David C. Rubie

Gottfried Schatz
Jozef Schell
Ronald H. Schwartz
Terrence J. Sejnowski
Ellen Solomon
Thomas A. Steitz
Michael P. Stryker
Richard F. Thompson
Robert T. N. Tjian
Emil R. Unanue
Geerat J. Vermeij

Bert Vogelstein
Harold Weintraub
Zena Werb
George M. Whitesides
Owen N. Witte
William A. Wulf
Keith Yamamoto

Computer-generated cubic unit cell (97.3 angstroms) of a silicate mesostructure; the lavender contours bound a periodic minimal surface along which silicate anions polymerize into an infinite sheet between two separate, bicontinuous surfactant volumes (green and red). Re-

cent breakthroughs in the synthesis of mesoporous materials have permitted the exploration of liquid crystal-inorganic interface formation in surfactant-silicate mesophases. See page 1299. [Image: A. Monnier, using Insight II software (Biosym)]



RESEARCH ARTICLE

Calibrating Rates of Early Cambrian Evolution 1293

S. A. Bowring, J. P. Grotzinger, C. E. Isachsen, A. H. Knoll, S. M. Pelechaty, P. Kolosov

REPORTS

Cooperative Formation of Inorganic-Organic Interfaces in the Synthesis of Silicate Mesostructures 1299

A. Monnier, F. Schüth, Q. Huo, D. Kumar, D. Margolese, R. S. Maxwell, G. D. Stucky, M. Krishnamurty, P. Petroff, A. Firouzi, M. Janicke, B. F. Chmelka

An Unnatural Biopolymer 1303

C. Y. Cho, E. J. Moran, S. R. Cherry, J. C. Stephans, S. P. A. Fodor, C. L. Adams, A. Sundaram, J. W. Jacobs, P. G. Schultz

Discovery of Vapor Deposits in the Lunar Regolith 1305

L. P. Keller and D. S. McKay

Lattice Effect of Strong Electron Correlation: Implication for Ferroelectricity and Superconductivity 1307

T. Egami, S. Ishihara, M. Tachiki

Molecular Dynamics of Adsorption and Segregation from an Alkane Mixture 1310

T. K. Xia and U. Landman

A Quasi-Biennial Oscillation Signal in General Circulation Model Simulations 1313

D. Cariolle, M. Amodei, M. Déqué, J.-F. Mahfouf, P. Simon, H. Teysède

Fabrication and Magnetic Properties of Arrays of Metallic Nanowires 1316

T. M. Whitney, J. S. Jiang, P. C. Searson, C. L. Chien

DNA Conformation-Induced Activation of an Eneidyne for Site-Specific Cleavage 1319

L. S. Kappen and I. H. Goldberg

Rat Annexin V Crystal Structure: Ca²⁺-Induced Conformational Changes 1321

N. O. Concha, J. F. Head, M. A. Kaetzel, J. R. Dedman, B. A. Seaton

Cooperative Interactions Between the *Caenorhabditis elegans* Homeoproteins UNC-86 and MEC-3 1324

D. Xue, Y. Tu, M. Chalfie

Prevention of Collagen-Induced Arthritis with an Antibody to gp39, the Ligand for CD40 1328

F. H. Durie, R. A. Fava, T. M. Foy, A. Aruffo, J. A. Ledbetter, R. J. Noelle

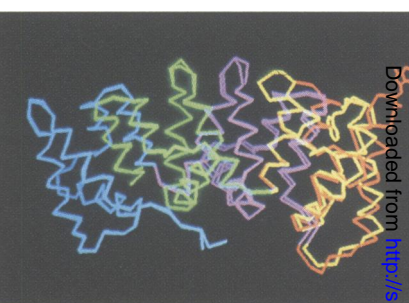
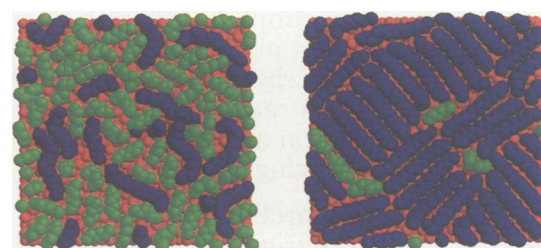
Synthesis and Degradation of Cyclic ADP-Ribose by NAD Glycohydrolases 1330

H. Kim, E. L. Jacobson, M. K. Jacobson

TECHNICAL COMMENTS

Determining Whitefly Species 1333

B. C. Campbell, J. E. Duffus, P. Baumann; A. C. Bartlett, N. J. Gawel; T. M. Perring, C. A. Farrar, A. D. Cooper, T. S. Bellows Jr., R. J. Rodriguez



1321

A calcium-triggered anchor

1310

Liquid simulations

AAAS Board of Directors

F. Sherwood Rowland
Retiring President,
Chairman
Eloise E. Clark
President
Francisco J. Ayala
President-elect

Robert A. Frosch
Florence P. Haseltine
William A. Lester, Jr.

Alan Schriesheim
Jean'ne M. Shreeve
Chang-Lin Tien
Warren M. Washington
Nancy S. Wexler

William T. Golden
Treasurer
Richard S. Nicholson
Executive Officer

■ **SCIENCE (ISSN 0036-8075)** is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1333 H Street, NW, Washington, DC 20005. Second-class postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 1993 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): \$87 (\$47 allocated to subscription). Domestic institutional subscription (51 issues): \$205. Foreign postage extra: Mexico, Caribbean (surface mail) \$50; other countries (air assist delivery) \$95. First class, airmail, student and emeritus rates on request. Canadian rates with GST available upon request, GST #1254 88122. **Change of address:** allow 6 weeks, giving old and new addresses and 11-digit

account number. **Postmaster:** Send change of address to *Science*, P.O. Box 2033, Marion, OH 43305-2033. **Single copy sales:** \$6.00 per issue prepaid includes surface postage; Guide to Biotechnology Products and Instruments, \$20. Bulk rates on request. **Authorization to photocopy** material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$1 per copy plus \$0.10 per page is paid directly to CCC, 27 Congress Street, Salem, MA 01970. The identification code for *Science* is 0036-8075/83 \$1 + .10. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

Science

261 (5126)

Science **261** (5126), 1253-1341.

ARTICLE TOOLS

<http://science.sciencemag.org/content/261/5126>

PERMISSIONS

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

Science (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.