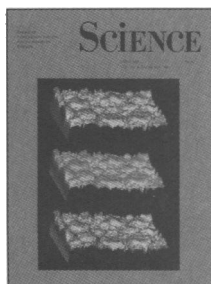


	623 This Week in <i>Science</i>
Editorial	625 Research Funding
Letters	629 Scientific Priorities: G. E. BROWN, JR. ■ Biotechnology Regulation: G. SIMON ■ Westinghouse Winners: A. Y. BLUMBERG ■ Museum Molecular Lab: M. NOVACEK ■ Molecular Structure of Charybdotoxin: Retraction: W. MASSEFSKI, JR., A. G. REDFIELD, D. R. HARE, C. MILLER
Perspective	632 Molecular Probes for Rice Blast Disease: J. E. HAMER
ScienceScope	635 LIGO in legislative limbo; presidential pursuit at the Salk Institute; etc.
News & Comment	636 Indirect Costs: The Gathering Storm ■ Capping an Infected Wisdom Tooth 638 Galileo Hits a Snag 639 No Citation Analyses Please, We're British 640 Patriot's Scud Busting Record Is Challenged 641 Conventional Math Tests Get Low Marks 642 <i>Briefings</i> : Animal Rightists Win One . . . ■ . . . And Lose Another ■ New Eye on the High Seas ■ Presidential Digital Commitment ■ Nouvelle Cuisine ■ \$11.5-Million Housecleaning ■ A Man's Reach Must Exceed His Grasp ■ Hope for African Elephants ■ Correction
Research News	644 Exploring the New Material World ■ One Man's Night Ride Through Nitride Country 646 Buckyballs, Hairyballs, Dopeyballs 647 Rare Heart Disease Linked to Oncogene 648 Move Over, Mendeleev 649 Liquid Crystals Meet the Cosmos at APS Meeting: Atoms for Logic ■ A Long Look into a Liquid Crystal Ball ■ Shadows in a Sea of Hot Gas
Articles	651 Hot-Spot Evolution and the Global Tectonics of Venus: R. J. PHILLIPS, R. E. GRIMM, M. C. MALIN 659 At the Crossroads of Chemistry and Immunology: Catalytic Antibodies: R. A. LERNER, S. J. BENKOVIC, P. G. SCHULTZ 668 SH2 and SH3 Domains: Elements That Control Interactions of Cytoplasmic Signaling Proteins: C. A. KOCH, D. ANDERSON, M. F. MORAN, C. ELLIS, T. PAWSON
Research Articles	675 Modular Organization of Genes Required for Complex Polyketide Biosynthesis: S. DONADIO, M. J. STAVER, J. B. MCALPINE, S. J. SWANSON, L. KATZ 680 An Unexpectedly Efficient Catalytic Antibody Operating by Ping-Pong and Induced Fit Mechanisms: P. WIRSCHING, J. A. ASHLEY, S. J. BENKOVIC, K. D. JANDA, R. A. LERNER

- **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 © 1991 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): \$82 (\$50 allocated to subscription). Domestic institutional subscription (51 issues): \$150. Foreign postage extra: Canada \$46, other (surface mail) \$46, air freight \$90. First class, airmail, school-year, and student rates on request. **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 1723, Riverton, NJ 08077. **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, Massachusetts 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.
- The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objectives are to further the work of scientists, to facilitate cooperation among them, to foster scientific freedom and responsibility, to improve the effectiveness of science in the promotion of human welfare, to advance education in science, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.



COVER Computer-enhanced portrait of a foam surface in triplicate. False color and spatial filtering have been used to sharpen the appearance of bubbles and liquid walls observed in a commercial foam product consisting of water and surfactants. Even with digital enhancement, these optical images reveal bubble sizes and shapes only at the surface. To probe the structure and dynamics of bubbles inside the foam, techniques have been developed that exploit the strong scattering of laser light by liquid-vapor interfaces. See page 686. [Images created by H. Deckman and P. Deckman]

Reports

- 686 Multiple Light-Scattering Probes of Foam Structure and Dynamics: D. J. DURIAN, D. A. WEITZ, D. J. PINE
- 688 Molecular Self-Assembly of Two-Terminal, Voltammetric Microsensors with Internal References: J. J. HICKMAN, D. OFER, P. E. LAIBINIS, G. M. WHITESIDES, M. S. WRIGHTON
- 691 Three-Dimensional Readout of Flash X-ray Images of Living Sperm in Water by Atomic-Force Microscopy: T. TOMIE, H. SHIMIZU, T. MAJIMA, M. YAMADA, T. KANAYAMA, H. KONDO, M. YANO, M. ONO
- 693 Atmospheric Lifetime of CHF₂Br, a Proposed Substitute for Halons: R. TALUKDAR, A. MELLOUKI, T. GIERCZAK, J. B. BURKHOLDER, S. A. MCKEEN, A. R. RAVISHANKARA
- 695 Partial Melting of the Allende (CV3) Meteorite: Implications for Origins of Basaltic Meteorites: A. J. G. JUREWICZ, D. W. MITTFELDEHLDT, J. H. JONES
- 698 Three-Dimensional Structure of Recombinant Human Interferon- γ : S. E. EALICK, W. J. COOK, S. VIJAY-KUMAR, M. CARSON, T. L. NAGABHUSHAN, P. P. TROTTA, C. E. BUGG
- 702 Fatal Sibling Aggression, Precocial Development, and Androgens in Neonatal Spotted Hyenas: L. G. FRANK, S. E. GLICKMAN, P. LICHT
- 704 Linkage of a Cardiac Arrhythmia, the Long QT Syndrome, and the Harvey *ras*-1 Gene: M. KEATING, D. ATKINSON, C. DUNN, K. TIMOTHY, G. M. VINCENT, M. LEPPERT
- 706 Identification of p53 Gene Mutations in Bladder Cancers and Urine Samples: D. SIDRANSKY, A. VON ESCHENBACH, Y. C. TSAI, P. JONES, I. SUMMERHAYES, F. MARSHALL, M. PAUL, P. GREEN, S. R. HAMILTON, P. FROST, B. VOGELSTEIN
- 709 In Vivo Footprinting of MHC Class II Genes: Bare Promoters in the Bare Lymphocyte Syndrome: C. J. KARA AND L. H. GLIMCHER
- 712 Presence of an SH2 Domain in the Actin-Binding Protein Tensin: S. DAVIS, M. L. LU, S. H. LO, S. LIN, J. A. BUTLER, B. J. DRUKER, T. M. ROBERTS, Q. AN, L. B. CHEN
- 715 Protection Against Malaria by Vaccination with Sporozoite Surface Protein 2 Plus CS Protein: S. KHUSMITH, Y. CHAROENVIT, S. KUMAR, M. SEDEGAH, R. L. BEAUDOIN, S. L. HOFFMAN
- 718 Biohybrid Artificial Pancreas: Long-Term Implantation Studies in Diabetic, Pancreatectomized Dogs: S. J. SULLIVAN, T. MAKI, K. M. BORLAND, M. D. MAHONEY, B. A. SOLOMON, T. E. MULLER, A. P. MONACO, W. L. CHICK
- 722 Transmission Between Pairs of Hippocampal Slice Neurons: Quantal Levels, Oscillations, and LTP: R. MALINOW
- 724 Effect of Light Chain V Region Duplication on IgG Oligomerization and in Vivo Efficacy: W. SHUFORD, H. V. RAFF, J. W. FINLEY, J. ESSELSTYN, L. J. HARRIS

Book Reviews

- 728 Culture, Control, and Commitment, *reviewed by* V. PUCIK ■ Origin of the Earth, D. L. ANDERSON ■ Some Other Books of Interest ■ Books Received

Products & Materials

- 732 Underwater Research Radiometer ■ Kit for Purification of Recombinant Proteins ■ Software Creates Digital Confocal Microscope ■ Pocket-Sized Balances ■ Scopes to View Inside Vacuum Chambers ■ Cartridges for Nucleic Acid Purification ■ Literature

Board of Directors

Donald N. Langenberg
*Retiring President,
Chairman*

Leon M. Lederman
President

F. Sherwood Rowland
President-elect

Mary Ellen Avery
Francisco J. Ayala
Eugene H. Cota-Robles
Robert A. Froesch
Joseph G. Gavin, Jr.
Florence P. Hasetline
Jean'ne M. Shreeve
Warren M. Washington

William T. Golden
Treasurer

Richard S. Nicholson
Executive Officer

Editorial Board

Charles J. Arntzen
Elizabeth E. Bailey
David Baltimore
William F. Brinkman
E. Margaret Burbidge
Pierre-Gilles de Gennes
Joseph L. Goldstein
Mary L. Good
Harry B. Gray
John J. Hopfield
F. Clark Howell
Paul A. Marks
Yasutomi Nishizuka
Helen M. Ranney
Robert M. Solow
Edward C. Stone
James D. Watson

Board of Reviewing Editors

John Abelson
Frederick W. Alt
Don L. Anderson
Stephen J. Benkovic
Floyd E. Bloom
Henry R. Bourne
James J. Bull
Kathryn Calame
Charles R. Cantor
Ralph J. Cicerone
John M. Coffin
Robert Dorfman
Bruce F. Eldridge
Paul T. Englund
Fredric S. Fay

Douglas T. Fearon
Harry A. Fozzard
Theodore H. Geballe
Roger I. M. Glass
Stephen P. Goff
Corey S. Goodman
Stephen J. Gould
Eric F. Johnson
Stephen M. Kosslyn
Konrad B. Krauskopf
Charles S. Levings III
Richard Losick
Anthony R. Means
Mortimer Mishkin
Roger A. Nicoll
William H. Orme-Johnson III
Yeshayahu Pocker

Dennis A. Powers
Erkki Ruoslahti
Thomas W. Schoener
Ronald H. Schwartz
Terrence J. Sejnowski
Thomas A. Steitz
Robert T. N. Tjian
Emil R. Unanue
Geerat J. Vermeij
Bert Vogelstein
Harold Weintraub
Zena Werb
George M. Whitesides
Owen N. Witte
William B. Wood
Keith Yamamoto

Science

252 (5006)

Science **252** (5006), 623-732.

ARTICLE TOOLS

<http://science.sciencemag.org/content/252/5006>

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. The title *Science* is a registered trademark of AAAS.

Copyright © 1991 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works.