



16 November 2012 | \$10

Science

Biomaterials

 AAAS

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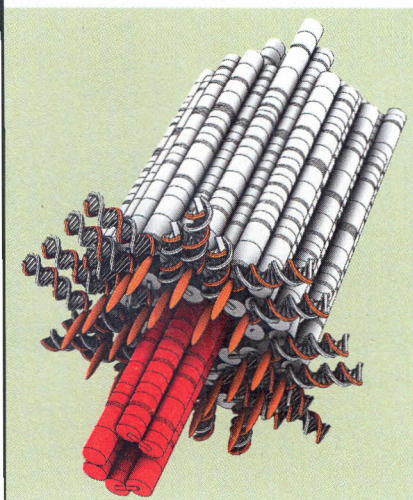
COVER

A 36× enlarged triply periodic porous cube of photocured polymer, 60 millimeters in total length, shown reflected off a pool of uncured resin. Computer-aided design makes it possible to tailor materials with control over porosity, pore size, and mechanical properties. These materials may subsequently find use as scaffolds for tissue engineering and cell-laden hydrogel constructs. See the special section starting on page 899 for a series of articles on biomaterials.

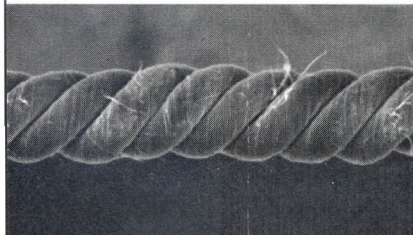
Fabrication: Ferry P. W. Melchels, Jan Feijen, Dirk W. Grijpma; Photograph: Nikki Hamers

DEPARTMENTS

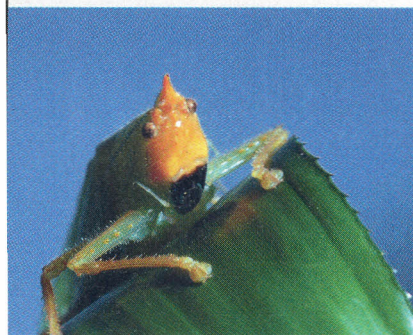
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Thermally driven actuators use a guest material within carbon nanotube yarns to generate fast torsional and tensile motions.
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M. Langecker et al.
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- 936** Coherent Phonon Heat Conduction in Superlattices
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- 939** Evidence for a Dynamo in the Main Group Pallasite Parent Body
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Some pallasite meteorites might have formed when liquid FeNi from an impactor was injected into their parent body's mantle.
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- 942** Evidence for Early Hafted Hunting Technology
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- 946** Financial Costs of Meeting Global Biodiversity Conservation Targets: Current Spending and Unmet Needs
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J. L. Jones et al.
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- 956** Akt-Mediated Regulation of Autophagy and Tumorigenesis Through Beclin 1 Phosphorylation
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[>> Perspective p. 889](#)
- 960** A Rab32-Dependent Pathway Contributes to *Salmonella* Typhi Host Restriction
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Expression of a single effector protein allows a human-specific pathogen to replicate within normally nonpermissive mice.
- 963** *Salmonella* Inhibits Retrograde Trafficking of Mannose-6-Phosphate Receptors and Lysosome Function
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- 968** Convergent Evolution Between Insect and Mammalian Audition
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- 975** A Genomic Regulatory Element That Directs Assembly and Function of Immune-Specific AP-1-IRF Complexes
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SCIENCEEXPRESS

www.sciencexpress.org
Publication Ahead of Print

C/EBP Transcription Factors Mediate Epicardial Activation During Heart Development and Injury
G. N. Huang et al.

10.1126/science.1229765

Multiplex Targeted Sequencing Identifies Recurrently Mutated Genes in Autism Spectrum Disorders

B. J. O'Roak et al.

10.1126/science.1227764

The COMPASS Subunit Spp1 Links Histone Methylation to Initiation of Meiotic Recombination

L. Acquaviva et al.

10.1126/science.1225739

Porphyry-Copper Ore Shells Form at Stable Pressure-Temperature Fronts Within Dynamic Fluid Plumes

P. Weis et al.

10.1126/science.1225009

Optomechanical Dark Mode

C. Dong et al.

10.1126/science.1228370

Alignment of Magnetized Accretion Disks and Relativistic Jets with Spinning Black Holes

J. C. McKinney et al.

10.1126/science.1230811

SCIENCENOW

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Highlights From Our Daily News Coverage

Wired for Harmony?

A new study shows that the ear and brain prefer harmonic sounds.

http://scim.ag/Wired_Harmony

Human Ancestors Were Grass Gourmands

Fossil teeth suggest that early hominins had a taste for the green stuff.

<http://scim.ag/Grass-Gourmands>

Bodystorming: Dance Grooves

Show How Molecules Move

Dancers help scientists assess models of molecular motion inside a cell.

<http://scim.ag/Molecular-Motion>

SCIENCESIGNALING

www.sciencesignaling.org
The Signal Transduction Knowledge Environment
13 November issue: <http://scim.ag/ss111312>

RESEARCH ARTICLE: Single Amino Acid Substitutions Confer the Antiviral Activity of the TRAF3 Adaptor Protein onto TRAF5

P. Zhang et al.

Two single amino acid changes enable the adaptor protein TRAF5 to promote antiviral responses.

RESEARCH ARTICLE: The Tetraspanin CD37 Orchestrates the $\alpha 4 \beta 1$ Integrin-Akt Signaling Axis and Supports Long-Lived Plasma Cell Survival

A. B. van Spruij et al.

Antibody-producing B cells require CD37-dependent integrin signaling for long-term survival.

PERSPECTIVE: PTEN—An Intercellular Peacekeeper?
N. R. Leslie

Transfer of PTEN between cells has potential as an intercellular form of tumor suppression.

ST NETWATCH: The EMBO Meeting YouTube Channel
Eminent scientists discuss their work and share their perspectives on careers in research.

ST NETWATCH: Protein Structure and Structural Bioinformatics

An online guide highlights the principles of protein structure.

SCIENCETRANSLATIONAL MEDICINE

www.sciencetranslationalmedicine.org
Integrating Medicine and Science
14 November issue: <http://scim.ag/stm111412>

EDITORIAL: Regenerative Engineering

C. T. Laurencin and Y. Khan

The future of tissue regeneration lies in "regenerative engineering," with biomaterials playing a key role.

COMMENTARY: What Is the Greatest Regulatory Challenge in the Translation of Biomaterials to the Clinic?

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Leaders in the field list the greatest barriers to biomaterials translation.

PERSPECTIVE: Building Vascular Networks
H. Bae et al.

Advances in generating vascular networks in biomaterials may aid translation of tissue engineering technologies.

PERSPECTIVE: Dynamic Environments—The Fourth Dimension

M. W. Tibbitt and K. S. Anseth

Four-dimensional cell matrices will aid in the translation of cell-based therapies.

REVIEW: Engineering Complex Tissues

A. Atala et al.

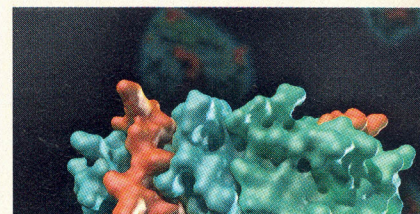
Advances in tissue engineering technologies will enable regeneration of complex tissues and organs.

REVIEW: Designing Regenerative Biomaterial Therapies for the Clinic

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Understanding adaptor specificity.

SCIENCECAREERS

www.sciencereers.org/career_magazine
Free Career Resources for Scientists
<http://scim.ag/SciCareers16November2012>

Tooling Up: Questions to Set Your Sails By (Part 1)
D. Jensen

Answering these six questions can help you choose your career path.

Careers in Biomaterials Science—An Overview
E. Pain

Scientists with an ability to work across fields can find exciting opportunities in biomaterials.

Materials Researchers in Biomedicine
M. Price

As biomedical applications emerge, materials scientists find new funding and research opportunities.

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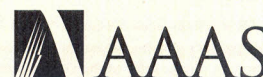
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