SPECIAL SECTION

Materials for Grid Energy

INTRODUCTION
921  Electricity Now and When

NEWS
922  Saving for a Rainy Day
925  Turning Over a New Leaf
Sunlight in Your Tank—Right Away

REVIEWS
928  Electrical Energy Storage for the Grid: A Battery of Choices
B. Dunn et al.
935  Lowering the Temperature of Solid Oxide Fuel Cells
E. D. Wachsman and K. T. Lee

>> Editorial p. 877, News Focus story p. 896, and Perspective p. 917

EDITORIAL
877  The Energy Research Imperative
Bill Gates
>> Materials for Grid Energy section p. 921

NEWS OF THE WEEK
880  A roundup of the week’s top stories

NEWS & ANALYSIS
883  NSF Creates Fast Track for Out-of-the-Box Proposals
884  Research Projects Could Be Roadkill in Revision of Massive Highway Bill
885  Revolution Brings New Hopes for Libyan Archaeology
886  China Looks to Balance Its Carbon Books An Unsung Carbon Sink

NEWS FOCUS
888  Will Busting Dams Boost Salmon? Out of the Frying Pan?
>> Science Podcast
893  Evolutionary Time Travel
896  Dreams of a Lithium Empire
>> Materials for Grid Energy section p. 921

LETTERS
899  Race Disparity in Grants: Check the Citations
H. P. Erickson
Race Disparity in Grants: Empirical Solutions Vital
J. L. Voss
Response
D. K. Ginther et al.
Race Disparity in Grants: Oversight at Home
J. L. Sherley
Response
F. S. Collins and L. A. Tabak

CORRECTIONS AND CLARIFICATIONS
905
TECHNICAL COMMENT ABSTRACTS

BOOKS ET AL.
906  The Next Convergence
M. Spence, reviewed by C. I. Jones
906  Design with the Other 90%: Cities
C. E. Smith, curator;
Design with the Other 90%: Cities
C. E. Smith et al., reviewed by E. M. Sternberg

POLICY FORUM
908  Preparing to Manage Climate Change Financing
S. D. Donner et al.

PERSPECTIVES
910  When More Is More
L.-A. Giraldeau
>> Report p. 1000
911  Understanding Tribal Fates
R. Arthur and J. Diamond
912  Human Locomotor Circuits Conform
S. Grillner
>> Report p. 997
914  One Atom Makes All the Difference
S. Ramaswamy
>> Brevia p. 940; Report p. 974
915  Antioxidant Strategies to Tolerate Antibiotics
P. Belenky and J. J. Collins
>> Reports pp. 982 and 986
916  Analyzing Solar Cycles
S. K. Solanki and N. A. Krivova
917  True Performance Metrics in Electrochemical Energy Storage
Y. Gogotsi and P. Simon
>> Materials for Grid Energy section p. 921
919  Retrospective: Steven P. Jobs (1955–2011)
T. J. Misa

CONTENTS continued >>

COVER
Nighttime view of present-day Chicago, USA. Since the 1893 Chicago World’s Fair introduced alternating current to the public, demand for electrical power has soared. Increased use of power from renewable resources will require new materials to store energy or generate power to ensure proper load balancing, as discussed in the special section beginning on page 921.

Photo: Jim Richardson/National Geographic/Getty Images

www.sciencemag.org  SCIENCE  VOL 334  18 NOVEMBER 2011  869
Published by AAAS
BREVIA

Evidence for Interstitial Carbon in Nitrogenase FeMo Cofactor
T. Spatzal et al.
Structural data show that the light atom at the center of the nitrogenase active site cofactor is a carbon.
>> Perspective p. 914; Report p. 974

RESEARCH ARTICLE

Crystal Structure of the Eukaryotic 60S Ribosomal Subunit in Complex with Initiation Factor 6
S. Klinge et al.
The 3.5 angstrom–resolution structure provides insights into the architecture of the eukaryotic ribosome and its regulation.

REPORTS

The Large, Oxygen-Rich Halos of Star-Forming Galaxies Are a Major Reservoir of Galactic Metals
J. Tumlinson et al.
Observations with the Hubble Space Telescope show that halos of ionized gas are common around star-forming galaxies.

The Hidden Mass and Large Spatial Extent of a Post-Starburst Galaxy Outflow
T. M. Tripp et al.
A galaxy that has experienced a recent burst of star formation has an extended halo of hot, ionized gas surrounding it.

A Reservoir of Ionized Gas in the Galactic Halo to Sustain Star Formation in the Milky Way
N. Lehner and J. C. Howk
Clouds of ionized gas located inside our Galaxy provide a major supply of matter for fueling ongoing star formation.

Giant Piezoelectricity on Si for Hyperactive MEMS
S. H. Baek et al.
High-quality piezoelectric thin films are grown and exhibit superior properties for microelectromechanical systems.

Ultralight Metallic Microlattices
T. A. Schaedler et al.
A route is developed for fabricating extremely low-density, hollow-strut metallic lattices.

Silica-Like Malleable Materials from Permanent Organic Networks
D. Montarnal et al.
A polymer shows thermoset-like stability while displaying melt processability like that of a thermoplastic.

Domain Dynamics During Ferroelectric Switching
C. T. Nelson et al.
The role of defects and interfaces on switching in ferroelectric materials is observed with high-resolution microscopy.

Negative Frequency-Dependent Selection of Sexually Antagonistic Alleles in Myodes glareolus
M. Mokkonen et al.
Selection of rare-male types in a population can maintain genetic variation that benefits one sex but harms the other.

X-ray Emission Spectroscopy Evidences a Central Carbon in the Nitrogenase Iron-Molybdenum Cofactor
K. M. Lancaster et al.
A central light atom in a cofactor at the nitrogenase active site is identified as a carbon.
>> Perspective p. 914; Brevia p. 940

Structural Basis of Silencing: Sir3 BAH Domain in Complex with a Nucleosome at 3.0 Å Resolution
K.-J. Armache et al.
A regulatory protein forms extensive interactions with the nucleosome core particle to create the basis for gene silencing.

Active Starvation Responses Mediate Antibiotic Tolerance in Biofilms and Nutrient-Limited Bacteria
D. Nguyen et al.
During growth arrest, bacteria tolerate the presence of antibiotics, thanks to mechanisms that protect against oxidant stress.
>> Science Podcast

H2S: A Universal Defense Against Antibiotics in Bacteria
K. Shatalin et al.
Sulfide formation helps to protect various bacteria from antibiotic toxicity.
>> Perspective p. 915

Wolbachia Enhance Drosophila Stem Cell Proliferation and Target the Germline Stem Cell Niche
E. M. Fast et al.
A bacterial endosymbiont up-regulates mitosis of Drosophila germline stem cells and blocks programmed cell death.

Correction of Sickle Cell Disease in Adult Mice by Interference with Fetal Hemoglobin Silencing
J. Xu et al.
Manipulation of a transcriptional repressor promotes expression of protective fetal globin genes.

Locomotor Primitives in Newborn Babies and Their Development
N. Dominici et al.
Mammalian locomotion patterns share common roots.
>> Perspective p. 912

Rational Choice, Context Dependence, and the Value of Information in European Starlings (Sturnus vulgaris)
E. Freidin and A. Kacelnik
Context-related information improves serial decision-making but impairs simultaneous choice.
>> Perspective p. 910