COVER
Using sunlight to rearrange the chemical bonds of water into hydrogen and oxygen, as in photosynthesis, would constitute a practical way to store solar energy as a fuel. Such an energy source will depend on new catalysts that promote this fuel-forming reaction cheaply and efficiently. See page 1072.

Photo illustration: Paul Montie (images: iStockphoto.com; Getty Images)

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PHYSICS
Quantum Communication with Zero-Capacity Channels
G. Smith and J. Yard
Two quantum communication channels, each of which is so noisy that it has zero-capacity to independently transmit information, can do so when used together.
10.1126/science.1162242

CELL BIOLOGY
High-Quality Binary Protein Interaction Map of the Yeast Interactome Network
H. Yu et al.
Comparison of existing methods for mapping protein-protein interactions in yeast cells shows that the high-throughput approaches are complementary to one another.
10.1126/science.1158684

TECHNICAL COMMENT ABSTRACTS
PALEONTOLOGY
Comment on "Protein Sequences from Mastodon and Tyrannosaurus rex Revealed by Mass Spectrometry"
P. A. Pevzner, S. Kim, J. Ng
full text at www.sciencemag.org/cgi/content/full/321/5892/1040b
Response to Comment on "Protein Sequences from Mastodon and Tyrannosaurus rex Revealed by Mass Spectrometry"
J. M. Asara, M. H. Schweitzer, L. C. Cantley, J. S. Cottrell
full text at www.sciencemag.org/cgi/content/full/321/5892/1040c

REVIEW
GEOLOGY
The Geological Evolution of the Tibetan Plateau
L. H. Royden, B. C. Burchfiel, R. D. van der Hil
>> News story p. 1028

BREVIA
ATMOSPHERIC SCIENCE
N₂O₅ Oxidizes Chloride to Cl₂ in Acidic Aerosol
J. M. Roberts et al.
Laboratory studies affirm that the oxidation of chloride ions in aerosols by N₂O₅ is a significant source of chlorine in the troposphere, a major reactant that helps form ozone.

ASTRONOMY
Star Formation Around Supermassive Black Holes
I. A. Bonnell and W. K. M. Rice
Simulations show that the disruption of a molecular cloud by a black hole can lead to the formation of nearby stars with eccentric orbits, explaining observations in our Galaxy.
>> Perspective p. 1047

PHYSICS
Quantum Gas of Deeply Bound Ground State Molecules
J. G. Danzl et al.
A coherent Raman pumping scheme cools cesium molecules to a state with minimal rotational energy, needed for producing cold molecular Bose-Einstein condensates.

MATERIALS SCIENCE
Observation of Atomic Diffusion at Twin-Modified Grain Boundaries in Copper
The presence of twinned grains at grain boundaries reduces current-induced diffusion of atoms in small copper wires, which can produce voids or even breaks.
**REPORTS CONTINUED...**

**CHEMISTRY**
A Stable Silicon(0) Compound with a Si=Si Double Bond
Y. Wang et al.
Carbene ligands stabilize diatomic silicon without oxidizing it, an unusual motif for a light element.
>> Perspective p. 1050

**CHEMISTRY**
In Situ Formation of an Oxygen-Evolving Catalyst in Neutral Water Containing Phosphate and Co^{2+}
M. W. Kanan and D. G. Nocera
A catalyst that precipitates in situ when cobalt ions are reduced in a phosphate buffer efficiently forms oxygen from water needed for electrochemical applications.

**ATMOSPHERIC SCIENCE**
The Global Atmospheric Circulation on Moist Isentropes
O. Pauluis, A. Czaja, R. Korty
An analysis of global atmospheric circulation from 1970 to 2004 shows that more mid-latitude air rose into the upper troposphere than current models would suggest.

**MICROBIOLOGY**
Targeting OseC Signaling and Virulence for Antibiotic Development
D. A. Rasko et al.
A small, nontoxic antibiotic candidate interferes with bacterial detection of the host and inhibits infection, in a therapeutic approach that may avoid development of resistance.
>> Science Podcast

**IMMUNOLOGY**
Variability and Robustness in T Cell Activation from Regulated Heterogeneity in Protein Levels
O. Feinerman et al.
Variations in component levels of the antigen-induced signaling pathway affect the final response of activated immune cells, conferring flexibility on the system.

**VIROLOGY**
Adenovirus Small e1a Alters Global Patterns of Histone Modification
G. A. Horwitz et al.
Epigenetic reprogramming by adenovirus e1a alters gene expression. When the centromere is removed from a yeast chromosome, a new one forms near the end of the chromosome, over a cluster of poorly expressed genes.

**MOLECULAR BIOLOGY**
Heterochromatin Integrity Affects Chromosome Reorganization After Centromere Dysfunction
K. Ishii et al.
When the centromere is removed from a yeast chromosome, a new one forms near the end of the chromosome, over a cluster of poorly expressed genes.

**NEUROSCIENCE**
Grueneberg Ganglion Cells Mediate Alarm Pheromone Detection in Mice
J. Brechbühl, M. Klæy, M.-C. Brouillet
A mysterious ganglion at the tip of the nose is an olfactory subsystem that senses alarm pheromones in mice.

**CELL BIOLOGY**
Control of the Reversibility of Cellular Quiescence by the Transcriptional Repressor HES1
L. Sang, H. A. Coller, J. M. Roberts
For quiescent cells to periodically divide and then rest, a member of the Notch signaling pathway HES1 must be present; this protein is also activated in some tumors.

**PSYCHOLOGY**
Automatic Mental Associations Predict Future Choices of Undecided Decision-Makers
S. Galdi, L. Arcuri, B. Gawronski
Unexpectedly, consciously expressed voting choices predict later unconscious preferences, showing that unconscious and conscious cognition is a two-way street.
>> Perspective p. 1046; Science Podcast
**PROTOCOL:** Application of Fluorescence Resonance Energy Transfer and Magnetic Twisting Cytometry to Quantify Mechano-Chemical Signaling Activities in a Living Cell
S. Na and N. Wang
Get detailed instructions for delivering biologically relevant mechanical stress to individual cells and observing the intracellular signaling activities that ensue.

**PRESENTATION:** Defining Drug Targets in Yeast Haploinsufficiency Screens—Application to Human Translational Pharmacology
M. Roberge
Identifying targets of drugs in yeast using genome-wide drug-induced haploinsufficiency is a viable approach to predicting drug targets in humans.
Science 321 (5892), 1016-1103.