SPECIAL SECTION

Working with Waste

INTRODUCTION
662 More Treasure Than Trash

NEWS
664 World of Waste
668 Garbology 101: Getting a Grip on Waste Modern-Day Waste Pickers

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

NEWS & ANALYSIS
631 Congress Ready to Extend Budget at Current Levels
632 Scientists Sue to Halt Financial Disclosure Rule
633 Are World Oil’s Prospects Not Declining All That Fast?
634 With Eye to Innovation, China Revamps Its Universities

PERSPECTIVES
700 Recycling of the #5 Polymer
M. Xanthos
702 The Challenges of Reusing Mining and Mineral-Processing Wastes
Z. Bian et al.

REVIEWs
681 Taking the “Waste” Out of “Wastewater” for Human Water Security and Ecosystem Sustainability
S. B. Grant et al.
684 Conversion of Wastes into Bioelectricity and Chemicals by Using Microbial Electrochemical Technologies
B. E. Logan and K. Rabaey
690 Challenges in Metal Recycling
B. K. Reck and T. E. Graedel

BOOKS ET AL.
647 The Viral Storm
N. Wolfe, reviewed by B. A. Han et al.
648 Breaking into the Lab
S. V. Rosser, reviewed by K. Andersen

POLICY FORUM
649 Water Sustainability for China and Beyond
J. Liu and W. Yang

PERSPECTIVES
651 A Henipavirus Vaccine in Sight
V. von Messling and R. Cattaneo
652 Uncovering the Uranium-Nitrogen Triple Bond
A. P. Sattelberger and M. J. A. Johnson
653 Precursor or Charge Supplier?
G. D. Fairn and S. Grinstein
655 A Different Angle on Light Communications
A. E. Willner et al.
658 Leveraging Shear Stress to Bust Clots with Nanoparticles
E. Lavik and J. Ustin

LETTERS
644 Predicting the Next Influenza Virus
S. Krauss and R. G. Webster
645 Steps Forward for Greece
N. M. Stavrakakis et al.
646 Mainstreaming Systems Science
P. Dargusch and C. Smith
647 NextGenVOICES
648 CORRECTIONS AND CLARIFICATIONS
649 TECHNICAL COMMENT ABSTRACTS

CONTENTS continued >>

EDITORIAL
623 An End to Waste?
Janet G. Hering
673 Finding a New Way to Go
674 Water Reclamation Going Green
A Better Way to Denitrify Wastewater
676 Save Pave the World!
679 Getting Minds Out of the Sewer

SCIENCE
VOL 337 10 AUGUST 2012

Cover
Recycling aluminum cans (shown here in bales at a facility in Philadelphia, PA) is just one of the many approaches directed toward doing something productive with the world’s ever-expanding stream of waste. In the special section Working with Waste (page 662), we survey multifaceted efforts to tackle this global challenge. For the story behind the cover, go to http://scim.ag/cov6095.

Photo: Huguette Roe, www.hroephoto.com

Published by AAAS
www.sciencemag.org
659  Low-Temperature Oxidation of Methane
R. J. Farrauto
>> Report p. 713

661  Retrospective: Elinor Ostrom (1933–2012)
R. K. Wilson

RESEARCH ARTICLE

704  Evolution of Ocean Temperature and Ice Volume Through the Mid-Pleistocene Climate Transition
H. Elderfield et al.
The effects of changes in ice volume and ocean temperature during the mid-Pleistocene transition have now been resolved.
>> Perspective p. 656

REPORTS

710  Divergent Nematic Susceptibility in an Iron Arsenide Superconductor
J.-H. Chu et al.
Electrons are shown to drive a structural transition in a pnictide superconductor.

713  Exceptional Activity for Methane Combustion over Modular Pd@CeO₂ Subunits on Functionalized Al₂O₃
M. Cargnello et al.
A catalyst allows complete combustion of methane, a more powerful greenhouse gas than carbon dioxide, to occur at lower temperatures.
>> Perspective p. 659

717  Synthesis and Structure of a Terminal Uranium Nitride Complex
D. M. King et al.
A uranium triple bond to nitrogen makes use of the heavy element’s f orbitals.
>> Perspective p. 652

721  The Provenances of Asteroids, and Their Contributions to the Volatile Inventories of the Terrestrial Planets
C. M. O’D. Alexander et al.
Hydrogen isotopic analysis of primitive meteorites implicates asteroids as early sources of Earth’s water.

724  Earthquake in a Maze: Compressional Rupture Branching During the 2012 Mw 8.6 Sumatra Earthquake
L. Meng et al.
The mechanics of the largest strike-slip earthquake ever recorded give clues about how intraplate earthquakes rupture.

727  PI4P and PI(4,5)P₂ Are Essential But Independent Lipid Determinants of Membrane Identity
G. R. V. Hammond et al.
The phospholipid phosphatidylinositol 4-phosphate defines important physical properties of the cell membrane.
>> Perspective p. 653

730  Lineage Tracing Reveals Lgr5⁺ Stem Cell Activity in Mouse Intestinal Adenomas
A. G. Schepers et al.
Multicolor reporter genes signal the fate of stem cells that fuel the growth of intestinal tumors in mice.

735  Closed-Loop Control of Epilepsy by Transcranial Electrical Stimulation
A. Berényi et al.
In a rodent model of petit mal epilepsy, the onset of a seizure triggers an electrical pulse that cuts short the seizure.

Shear-Activated Nanotherapeutics for Drug Targeting to Obstructed Blood Vessels
N. Korin et al.
Nanoparticles carrying a drug that dissolves blood clots disintegrate at sites of stenosis.
>> Perspective p. 658

742  Drosophila Dosage Compensation Involves Enhanced Pol II Recruitment to Male X-Linked Promoters
T. Conrad et al.
Boosting gene expression from the entire X chromosome in males happens mainly at the level of transcription initiation.

746  Fate-Restricted Neural Progenitors in the Mammalian Cerebral Cortex
S. J. Franco et al.
Where cortical neurons end up is determined before they begin to move.

749  Bergmann Glial AMPA Receptors Are Required for Fine Motor Coordination
A. S. Saab et al.
Signaling by glial cells helps to preserve cerebellar neurons that control movements.

753  The Pulvinar Regulates Information Transmission Between Cortical Areas Based on Attention Demands
Y. B. Saalmann et al.
A region of the thalamus synchronizes neuronal firing in two cortical areas and thus allocates attention.
Science 337 (6095), 613-757.

Science 337 (6095), 613-757.

ARTICLE TOOLS  http://science.sciencemag.org/content/337/6095

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.