

SPECIAL SECTION

Superconductivity

INTRODUCTION

189 Happy 100th, Superconductivity!

NEWS

- 190 Superconductivity's Smorgasbord of Insights: A Movable Feast
- 193 Search for Majorana Fermions Nearing Success at Last?

REVIEWS

- 196 The Challenge of Unconventional Superconductivity
M. R. Norman
- 200 The Electron-Pairing Mechanism of Iron-Based Superconductors
F. Wang and D.-H. Lee

>> *Science Careers* article p. 143



page 159

EDITORIAL

149 Merged Cultures to Empower Women
Kerri-Ann Jones et al.

NEWS OF THE WEEK

154 A roundup of the week's top stories

NEWS & ANALYSIS

- 159 First Specific Drugs Raise Hopes for Hepatitis C
- 160 First Detection of Ozone Hole Recovery Claimed
- 161 Daring Experiment in Higher Education Opens Its Doors
- 162 DOE Pulls the Plug on Massive Training Initiative
NSF Hits Ceiling on Graduate Fellowships
- 163 Signature on Visitor's Form Fuels *Stanford v. Roche* Court Battle
- 164 Plans Afoot to Extend Welcome Mat to More U.S.-Trained Science Grads
- 165 Winds of Change Leave Bioscientists Scrambling

NEWS FOCUS

- 166 Can Biotech and Organic Farmers Get Along?
Scientist in the Middle of the GM-Organic Wars
>> *Science Podcast*
- 170 American Physical Society Meeting
Electrons Surf Sound Waves to Connect the Quantum Dots
Ice Is Predicted to Be Weirder Still
One Cool Way to Erase Information
Snapshots From the Meeting

LETTERS

- 173 Food for Thought on Climate Policy
B. G. Subhadra
- AIDS Prevention Plans Must Reflect Local Values
A. Mazus
- NSF Program Benefits Schools in Need
R. Parthasarathy et al.
- Drug Regulatory Systems Must Foster Innovation
H. Schellekens et al.
- Viability of GM Fungi Crucial to Malaria Control
C. J. M. Koenraad et al.

175 TECHNICAL COMMENT ABSTRACTS

BOOKS ET AL.

- 176 Radioactive
L. Redniss, reviewed by *H. R. Shell*
- 177 Next Medicine
W. M. Bortz II, reviewed by *R. L. Krall*

POLICY FORUM

178 Mekong Hydropower Development
R. E. Grumbine and J. Xu

PERSPECTIVES

- 180 Shooting for the Stars
M. H. Montgomery
>> *Brevia* p. 205; *Reports* pp. 213 and 216;
Science Podcast
- 181 Climbing in 190 Dimensions
M. Yarus
>> *Research Article* p. 209
- 182 The Phase Behavior of Interfaces
M. P. Harmer
>> *Research Article* p. 206
- 184 Minor Splicing, Disrupted
H. K. J. Pessa and M. J. Frilander
>> *Reports* pp. 238 and 240
- 185 Rapid Insect Evolution by Symbiont Transfer
F. M. Jiggins and G. D. D. Hurst
>> *Report* p. 254
- 186 Eosinophils Forestall Obesity
R. M. Maizels and J. E. Allen
>> *Report* p. 243

CONTENTS continued >>



COVER

When certain materials drop below a critical temperature, they enter a superconducting phase characterized by zero electrical resistance. A readily visualized signature of the superconducting state is the ability to expel magnetic fields. In this photo, a magnet placed on top of the ceramic yttrium barium copper oxide levitates as the temperature drops below 123 kelvin and the material becomes superconducting. See the special section beginning on page 189.

Photo: Takeshi Takahara/Photo Researchers, Inc.

DEPARTMENTS

- 145 This Week in *Science*
- 150 Editors' Choice
- 152 *Science* Staff
- 257 New Products
- 258 *Science Careers*

BREVIA

- 205 **Kepler Detected Gravity-Mode Period Spacings in a Red Giant Star**
P. G. Beck et al.
Asteroseismic observations with the Kepler satellite probed the deep interior of an evolved star.
>> *Perspective p. 180; Reports pp. 213 and 216*

RESEARCH ARTICLES

- 206 **Nanometer-Thick Equilibrium Films: The Interface Between Thermodynamics and Atomistics**
M. Baram et al.
Model experiments show that nanometer-thick films at interfaces reduce interface energy and form an equilibrium state.
>> *Perspective p. 182*
- 209 **Ribozyme-Catalyzed Transcription of an Active Ribozyme**
A. Wochner et al.
A functional RNA has been synthesized by an RNA enzyme from mononucleotide building blocks.
>> *Perspective p. 181*

REPORTS

- 213 **Ensemble Asteroseismology of Solar-Type Stars with the NASA Kepler Mission**
W. J. Chaplin et al.
Measurements of 500 Sun-like stars show that their properties differ from those predicted by stellar population models.
- 216 **HD 181068: A Red Giant in a Triply Eclipsing Compact Hierarchical Triple System**
A. Derekas et al.
The Kepler satellite reveals details of the oscillation patterns of an evolved star in an exotic triple-star system.
>> *Perspective p. 180; Brevia p. 205*
- 218 **Surface-Plasmon Holography with White-Light Illumination**
M. Ozaki et al.
A technique based on light-induced electronic excitations on a metal-film surface is used for three-dimensional color displays.
- 220 **The Hot Summer of 2010: Redrawing the Temperature Record Map of Europe**
D. Barriopedro et al.
Large parts of eastern Europe experienced exceptional warmth during the summer of 2010.
- 224 **^{13}C NMR Guides Rational Design of Nanocatalysts via Chemisorption Evaluation in Liquid Phase**
K. Tedsree et al.
Nuclear magnetic resonance spectroscopy can reveal the strength of substrate interactions with heterogeneous catalysts.

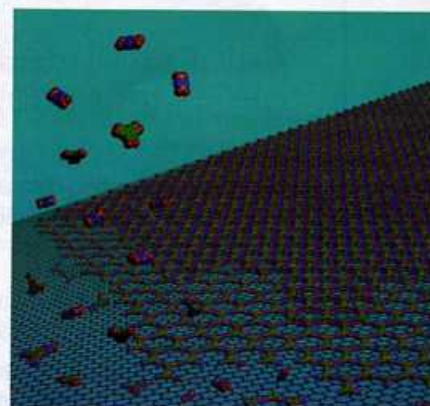
- 228 **Oriented 2D Covalent Organic Framework Thin Films on Single-Layer Graphene**
J. W. Colson et al.
Microporous covalent organic frameworks, which usually form as insoluble powders, grow as crystalline films on graphene.
- 231 **A Virophage at the Origin of Large DNA Transposons**
M. G. Fischer and C. A. Suttle
A parasite of a giant DNA virus that rescues the host has been shown to be the progenitor of a widespread transposon.
- 234 **A Dynamic Knockout Reveals That Conformational Fluctuations Influence the Chemical Step of Enzyme Catalysis**
G. Bhabha et al.
An *Escherichia coli* dihydrofolate reductase mutant is catalytically defective, because motions in the active site are impaired.
- 238 **Mutations in U4atac snRNA, a Component of the Minor Spliceosome, in the Developmental Disorder MOPD I**
H. He et al.
Minor RNA splicing defects can cause a major human developmental disorder.
- 240 **Association of TALS Developmental Disorder with Defect in Minor Splicing Component U4atac snRNA**
P. Ederly et al.
Mutation in a small nuclear RNA hinders splicing of pre-messenger RNAs and causes the severe malformations of Taybi-Linder syndrome.
>> *Perspective p. 184*
- 243 **Eosinophils Sustain Adipose Alternatively Activated Macrophages Associated with Glucose Homeostasis**
D. Wu et al.
Regulation of adipose tissue macrophages by eosinophils reveals an unexpected role for eosinophils in metabolic homeostasis.
>> *Perspective p. 186*
- 247 **AMP-Activated Protein Kinase Regulates Neuronal Polarization by Interfering with PI 3-Kinase Localization**
S. Amato et al.
A bioenergy-sensing pathway determines axon initiation and growth in neurons.
- 251 **Coping with Chaos: How Disordered Contexts Promote Stereotyping and Discrimination**
D. A. Stapel and S. Lindenberg
Messiness makes people long for orderliness, which results in a rush to categorize and simplify.
>> *Science Podcast*
- 254 **Rapid Spread of a Bacterial Symbiont in an Invasive Whitefly Is Driven by Fitness Benefits and Female Bias**
A. G. Himler et al.
A *Rickettsia* bacterium promotes its own geographical spread by manipulating its insect host's sex ratio and fecundity.
>> *Perspective p. 185*



page 176



pages 185 & 254



page 228



pages 186 & 243

CONTENTS continued >>