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.
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.

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206 Nanometer-Thick Equilibrium Films: The Interface Between Thermodynamics and Atomistics
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Model experiments show that nanometer-thick films at interfaces reduce interface energy and form an equilibrium state.

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209 Ribozyme-Catalyzed Transcription of an Active Ribozyme
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A functional RNA has been synthesized by an RNA enzyme from mononucleotide building blocks.

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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.

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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
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224 13C NMR Guides Rational Design of Nanocatalysts via Chemisorption Evaluation in Liquid Phase
K. Tedres 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
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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.

A Dynamic Knockout Reveals That Conformational Fluctuations Influence the Chemical Step of Enzyme Catalysis
G. Bhattacharyya et al.

An Escherichia coli dihydrofolate reductase mutant is catalytically defective, because motions in the active site are impaired.

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.

Association of TALS Developmental Disorder with Defect in Minor Splicing Component U4atac snRNA
P. Edery et al.

Mutation in a small nuclear RNA hinders splicing of pre-messenger RNAs and causes the severe malformations of Taybi-Linder syndrome.

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243 Eosinophils Sustain Adipose Alternatively Activated Macrophages Associated with Glucose Homeostasis
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Regulation of adipose tissue macrophages by eosinophils reveals an unexpected role for eosinophils in metabolic homeostasis.

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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.

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
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A Rickettsia bacterium promotes its own geographical spread by manipulating its insect host’s sex ratio and fecundity.

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