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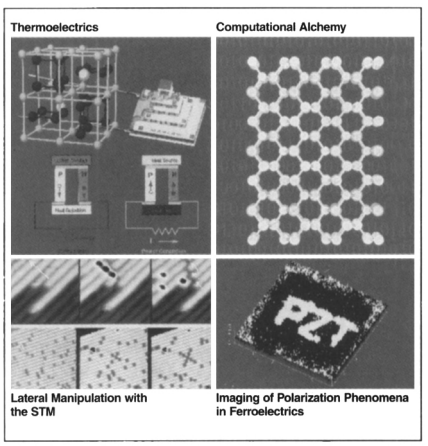
TECHNICAL FEATURES

MRS NEWS



ABSTRACTS

DEPARTMENTS

◀ **ON THE COVER:** (Top Left) Illustration of the filled-skutterudite structure for $LaFe_3CoSb_{12}$: The two yellow spheres represent the La atoms, the red spheres represent the Fe or Co atoms, and the blue spheres represent Sb atoms. Note the four-membered Sb rings in this thermoelectric "rattler" and the large "cage" in which the La resides. The multistage thermoelectric-cooling module is capable of reaching temperatures as low as 160 K at the small copper pad on the final (highest) stage. The cooling module is composed of over a hundred thermoelectric couples similar to those shown in the bottom left of this figure. See the article on page 15. (Photograph courtesy of Marlow Industries, Dallas, Texas.)

(Top Right) A graphical representation of a (2,2) C_2BN [011] superlattice, a member of a promising new class of superhard materials elucidated via computational alchemy. See the article on page 22.

(Bottom Left) Lateral manipulation of substrate atoms and single absorbates using a scanning tunneling microscope. The top series shows Cu(211) with a defect step separating two terraces, extraction of three Cu atoms out of the intrinsic step-edge sites along a line indicated by the white arrow in the previous image, and the Cu atoms after they moved along the step edges to expose the three vacancy sites indicated by the three white arrows. The bottom series shows the formation of the letter "X" by controlled lateral manipulation of CO molecules on Cu(211) at 15 K. The size of each image is 13.5 nm x 13.5 nm. See the article on page 28.

(Bottom Right) Nanoscale domain writing and imaging in a ferroelectric thin film of lead zirconate titanate (PZT) by means of scanning force microscopy (SFM). The "PZT" pattern represents negatively polarized domains written by moving a conductive tip under a negative bias, while the dark square is a positively polarized area of the film produced by scanning the tip under a positive bias. The written structure was subsequently imaged in the SFM piezoresponse mode by detecting the piezoelectric vibration of the film induced by an ac voltage applied through the probing tip. See the article on page 33. (Photograph provided by A. Gruverman, Joint Research Center for Atom Technology.)

About the Materials Research Society

The Materials Research Society (MRS), a nonprofit scientific association founded in 1973, promotes interdisciplinary goal-oriented basic research on materials of technological importance. Membership in the Society includes over 12,000 scientists, engineers, and research managers from industrial, government, and university research laboratories in the United States and nearly 68 countries.

The Society's interdisciplinary approach differs from that of single-discipline professional societies because it promotes information exchange across the many technical fields touching materials development. MRS sponsors two major international annual meetings encompassing approximately 70 topical symposia, and also sponsors numerous single-topic scientific meetings. The Society recognizes professional and technical excellence and fosters technical interaction in local geographic regions through Sections and University Chapters.

MRS participates in the international arena of materials research through the International Union of Materials Research Societies (IUMRS). MRS is a member of the Federation of Materials Societies and is an affiliate of the American Institute of Physics.

MRS publishes symposium proceedings, *MRS Bulletin*, *Journal of Materials Research*, and other publications related to current research activities.

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