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Interfaces
Part I

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ON THE COVER: High-resolution electron microscopy image of symmetric and asymmetric grain-boundary-plane configurations in a Au bicrystal with $<110>$ 50° tilt misorientation between the two grains. The atomically well-matched symmetric (113) (113) tilt boundary (long facet, indicating a low energy) is followed by the shorter asymmetric (225) (441) and (557) (771) and the symmetric (332) (332) facets. For details see "Structure and Energy of Grain Boundaries in Metals" by K.L. Merkle and D. Wolf on p. 42.

The inset shows electronic-structure simulations of charge density (left) and spin density (right) for an Fe-ZnSe (metal-semiconductor) superlattice. The Fe atoms sit at the upper and lower edges of the inset; the two center layers are Se and Zn atoms, respectively. For the charge density, blue contours represent low-density regions at the interface where the empty sites of the zinc-blende structure are located; density levels increase from blue to green to yellow to red. For the spin density, blue contours represent negative density; yellow and red contours represent positive density. Note how the negative spin density spreads widely into the semiconductor layer. For details see "Structural, Electronic, and Magnetic Properties of Thin Films and Superlattices" by A.J. Freeman, A. Continenza, and C. Li on p. 27.

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The Materials Research Society (MRS) is a nonprofit scientific association founded in 1973 to promote interdisciplinary goal-oriented basic research on materials of technological importance. Membership in the Society includes more than 10,000 scientists from industrial, government, and university research laboratories in the United States and more than 25 countries.

The Society's interdisciplinary approach to the exchange of technical information is qualitatively different from that provided by single-discipline professional societies because it promotes technical exchange across the various fields of science affecting materials development. MRS sponsors two major international annual meetings encompassing approximately 40 topical symposia, as well as numerous single-topic scientific meetings each year. It recognizes professional and technical excellence, conducts short courses, and fosters technical exchange in various local geographic regions through Section activities and University Chapters.

MRS is an Affiliated Society of the American Institute of Physics and participates in the international arena of materials research through associations with professional organizations such as European MRS.

MRS publishes symposium proceedings, the *MRS BULLETIN, Journal of Materials Research,* and other current scientific developments.

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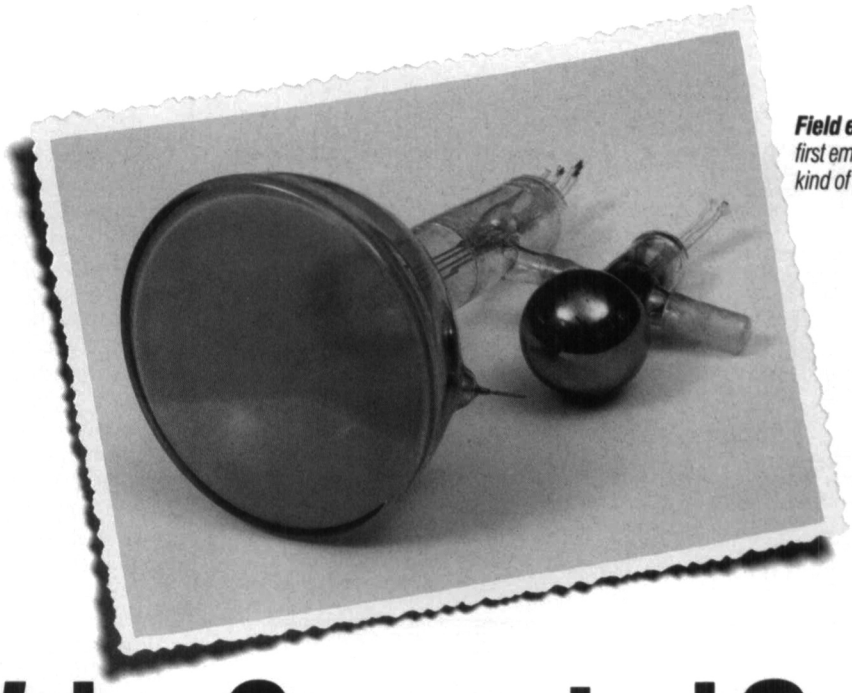

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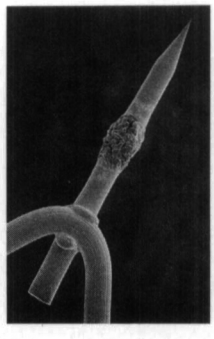

Tip of an an FEI ZrO/W Schottky emission cathode.

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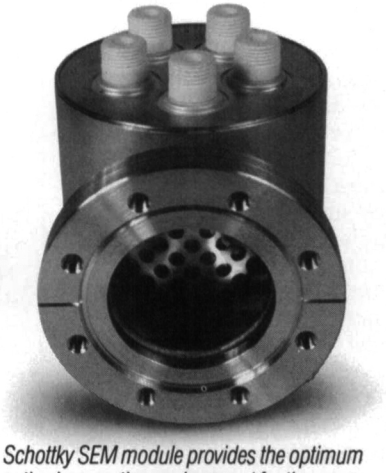

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