

MRS BULLETIN

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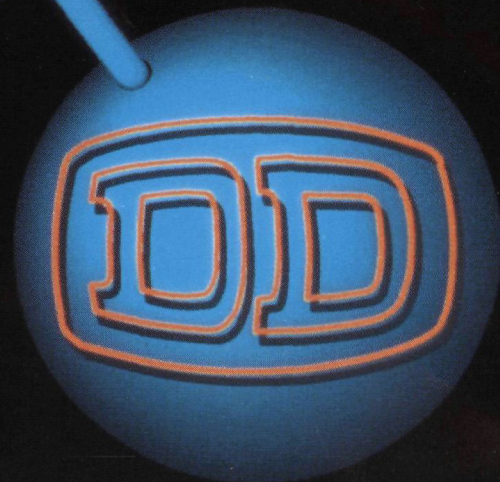
Serving the International Materials Research Community

Interfaces

Part I



A NEW CLUSTER IS BORN



General Ionex acquired by High Voltage Engineering Europa B.V.

In December 1987 High Voltage Engineering Europa B.V. (HVEE) acquired Dowlish Developments Ltd (DD), an accelerator tube manufacturer located in the United Kingdom.

On April 10, 1989, HVEE purchased the General Ionex Analytical Product Group from Genus Inc. based in the United States.

Through this acquisition HVEE positions itself as the largest and most diverse manufacturer of particle accelerators for the scientific and industrial research communities.

The acquired General Ionex (GI) product lines, which include the Tandetron accelerator systems and Model 4175 RBS Analyser, will be manufactured in HVEE's new, well-equipped facility in Amersfoort, The Netherlands.

World wide marketing of all products from HVEE, DD and GI will originate from HVEE Amersfoort with sales and service offices in the USA, Europe and Japan.

After addition of the newly acquired products HVEE's product lines include:

– *Ion Accelerator Systems*

- Air insulated accelerators up to 500 kV
- Single ended Van de Graaff accelerators up to 4 MV
- Tandem Tandetron accelerators up to 3 MV/TV

– *Research ion implanters*

- Beam energies 10 keV-9 MeV and higher

– *Systems for ion beam analysis*

- Systems for RBS, PIXE, PIGE, NRA, ERD, MACS and MEIS

– *Components*

- HV power supplies, electron and ion accelerator tubes, ion sources beamline components, beam monitoring equipment, UHV sample manipulators, etc.

For further information on this transaction and product literature please contact HVEE in Amersfoort/NL.



**More
Energy for Research**

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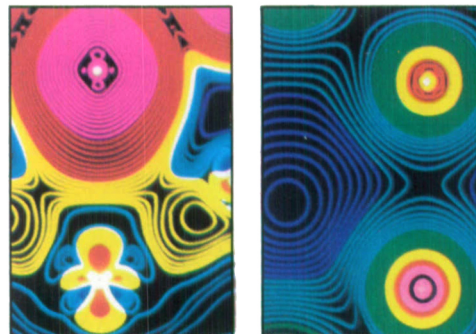
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ON THE COVER: High-resolution electron microscopy image of symmetric and asymmetric grain-boundary-plane configurations in a Au bicrystal with $\langle 110 \rangle 50^\circ$ tilt misorientation between the two grains. The atomically well-matched symmetric (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.

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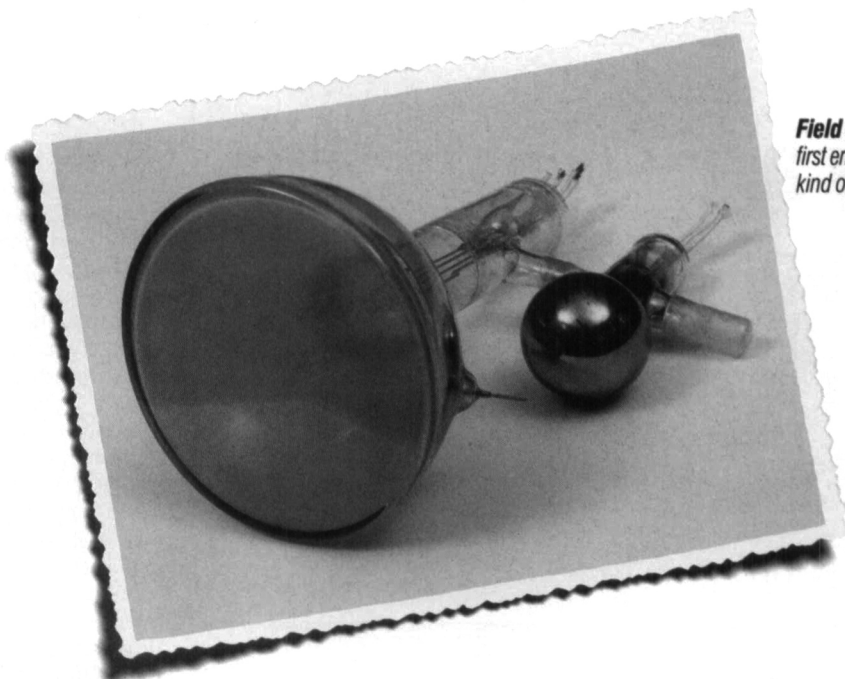
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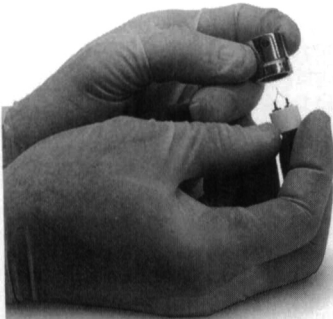
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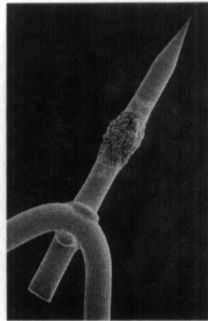


Field emission in 1971. FEI's first emission cathodes were for this kind of gun.

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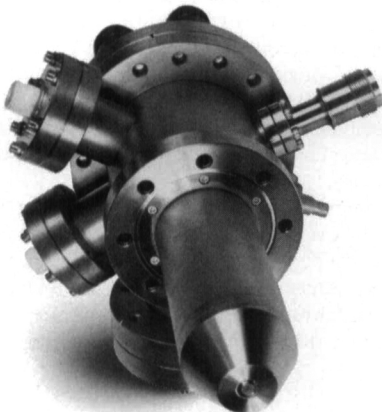


Mounted FEI Schottky cathode with suppressor removed.



Tip of an FEI ZrO/W Schottky emission cathode.

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