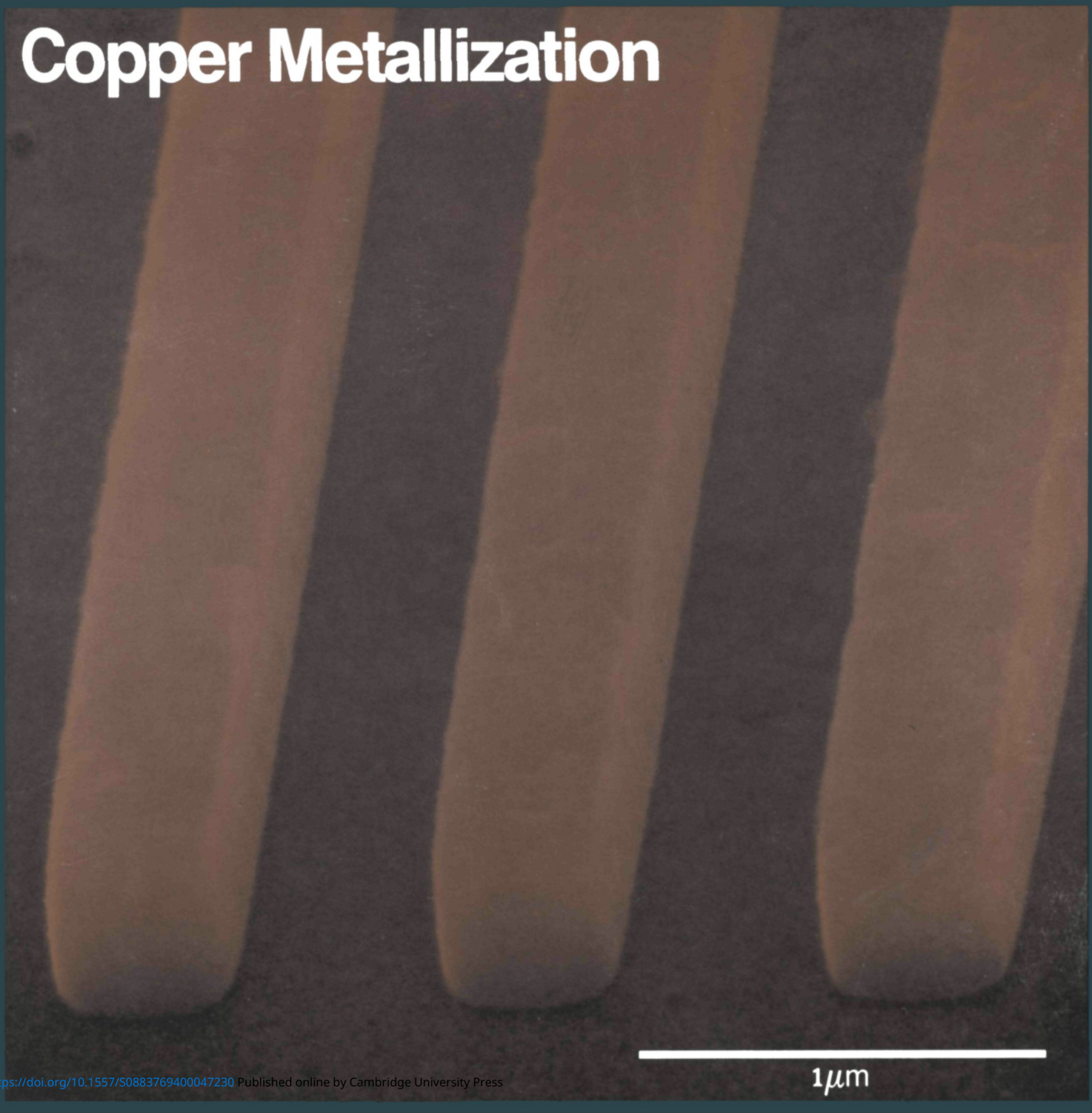
MRS BULLETIN

Serving the International Materials Research Community

A Publication of the Materials Research Society

June 1993, Volume XVIII, No. 6

Copper Metallization



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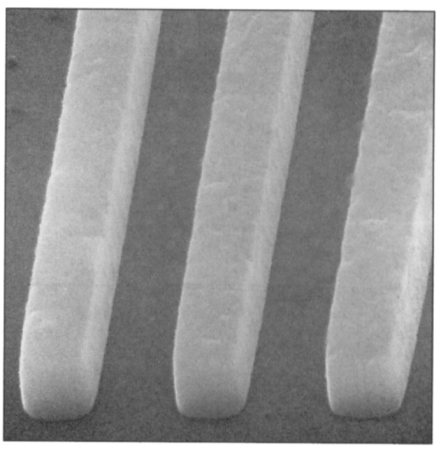
Volume XVIII, Number 6 ISSN: 0883-7694 CODEN: MRSBEA

COPPER METALLIZATION

INTERNATIONAL UNION OF MATERIALS RESEARCH SOCIETIES

MRS 20TH ANNIVERSARY

DEPARTMENTS



ON THE COVER: Copper lines made by selective electroless copper deposition on Au/Ti seeding inside open trenches in PMMA matrix. The Cornell Nanoline Copper Technology was developed by Y. Shacham-Diamand at Cornell University under SRC funding. The electron-beam exposure was done by R. Tiberio at the National Nanofabrication Facility (NNF) at Cornell University. For more information on this topic, see "Electroless Cu for VLSI," by J.S.H. Cho, H-K. Kang, S.S. Wong, and Y. Shacham-Diamand, p. 31.

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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 nearly 11,000 scientists, engineers, and research managers from industrial, government, and university research laboratories in the United States and nearly 50 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 50 topical symposia, and also sponsors numerous single-topic scientific meetings. The Society recognizes professional and technical excellence, conducts short courses, 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 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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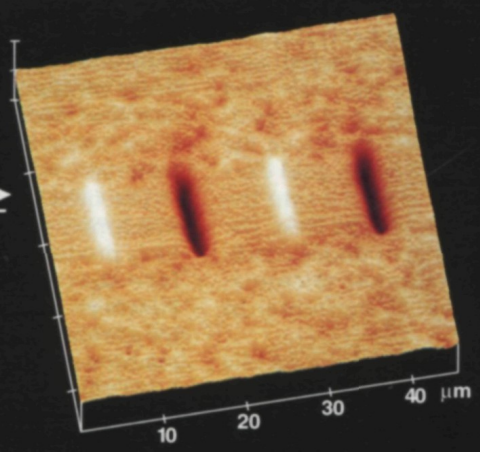
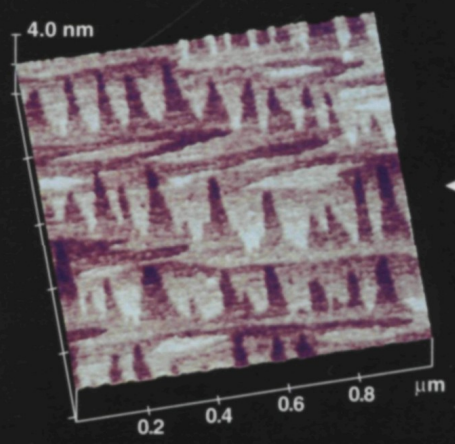
MultiMode™ Scanning Probe Microscope

Magnetic Force Gradients ▶

These hard disk bits were written with alternating polarity and a slight skew. The speckle above and below the recorded track is due to the disordered magnetic domains in the virgin media.



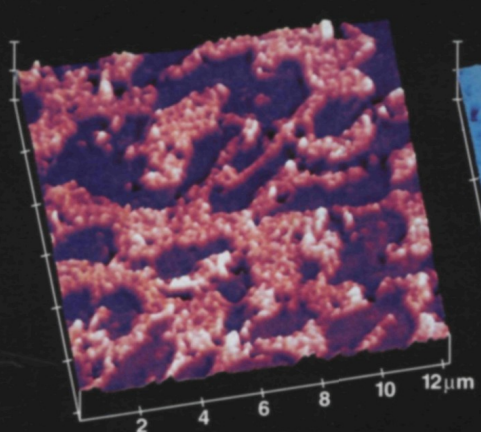


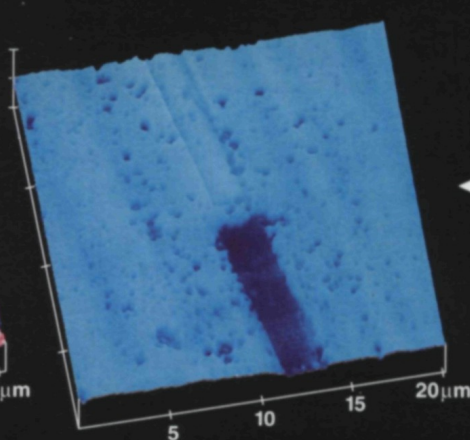
◀ *TappingMode™ AFM Topography*

These 1.6Å-high terraces of epitaxially-grown silicon were imaged using the NanoScope Large Sample Stage. Only the AFM probe touched the top surface of the intact 8in wafer.

Lateral Force (Friction) ▶

A mixture of EPDM and natural rubber scanned with a Si_3N_4 tip shows regions of higher friction (lighter color) and lower friction (darker color). These regions probably correspond to the two different types of rubber.





◀ *Electric Force Gradients*

A voltage applied to a broken metallization line on a GaAs test structure is shown. The image clearly indicates that the line is open at the break. This capability is another example of Digital Instruments innovation.

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