

MRS Bulletin

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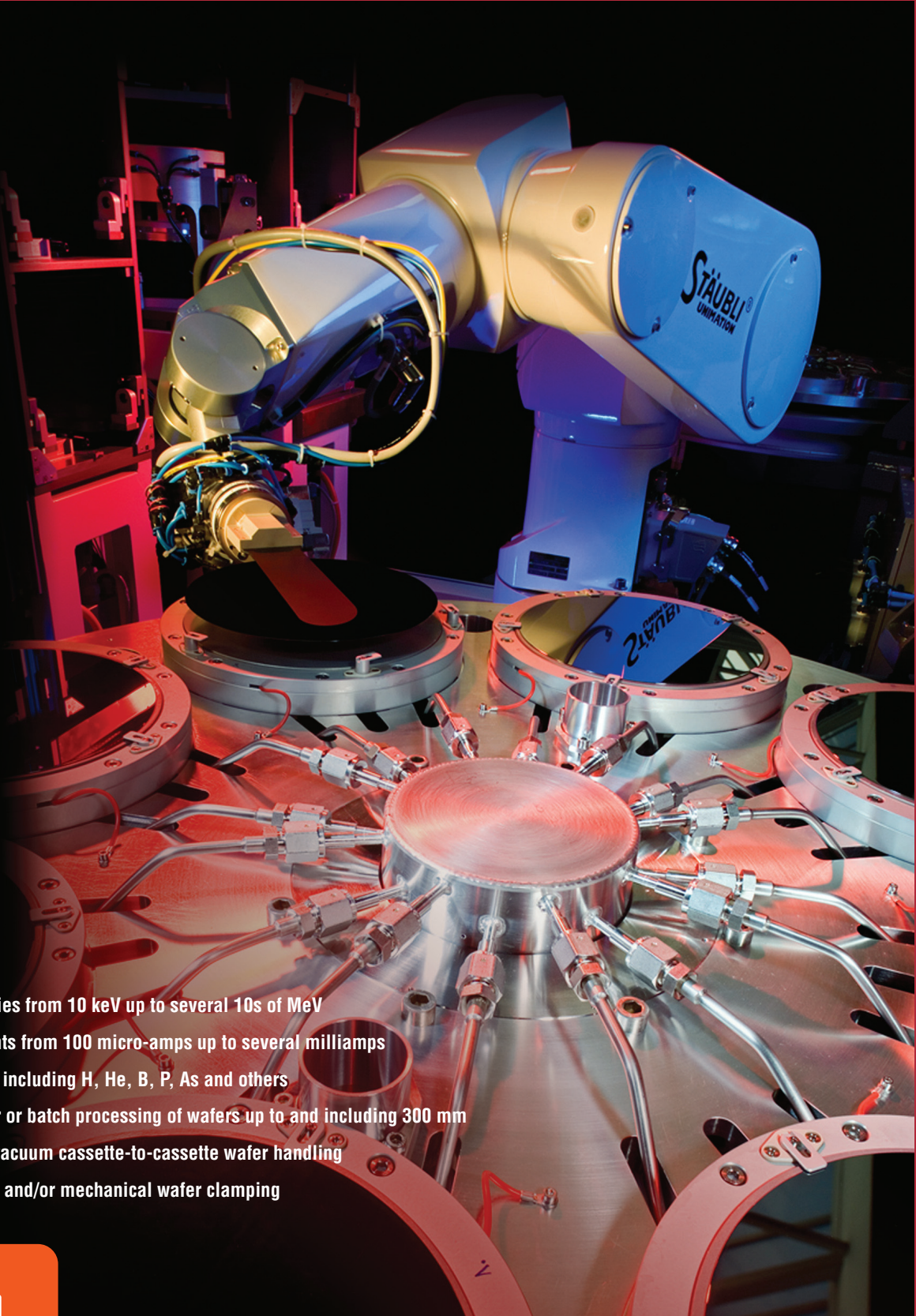
Twinning in metallic materials

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The materials innovation ecosystem:
A key enabler for the MGI

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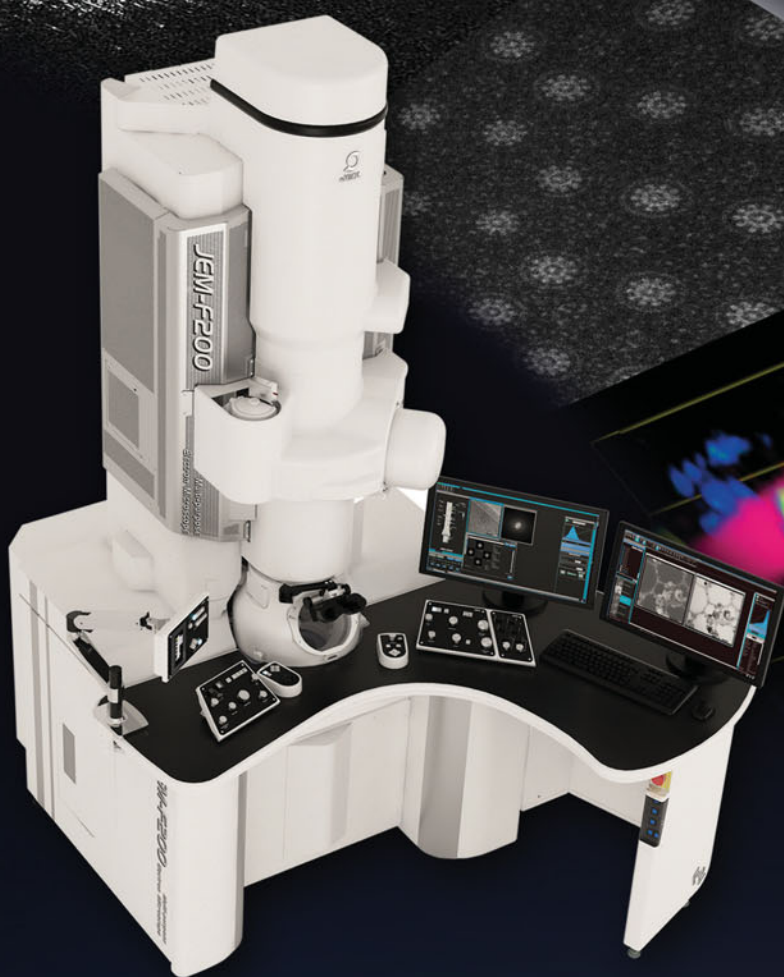
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*STEM-HAADF image of Quasicrystal • Courtesy of Professor Emeritus K. Hiraga - Tohoku University

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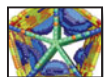
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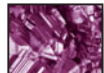
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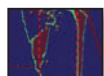
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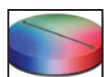
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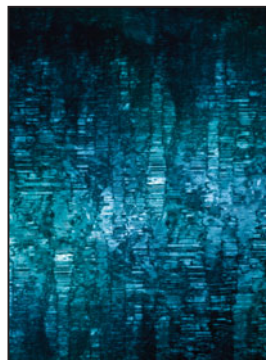
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David L. McDowell and Surya R. Kalidindi



ON THE COVER

Twinning in metallic materials. The formation and growth of twins result in substantial evolution of microstructures and properties in a variety of metallic materials. The articles in this issue of *MRS Bulletin* overview the synthesis and mechanical behavior of nanotwinned metallic materials as well as plasticity dominated by mechanical twinning. The cover shows a transmission electron microscope micrograph of sputter-deposited epitaxial nanotwinned Ag in a cross-sectional view examined from the [01 $\bar{1}$] zone axis. The image reveals high-density nanoscale growth twins with coherent twin boundaries normal to the growth direction. The average twin spacing is ~9 nm, and the average columnar domain size is ~120 nm. Image courtesy of Daniel Bufford, Sandia National Laboratories, and Xinghang Zhang, Texas A&M University. The image was taken at the Microscopy and Imaging Center at Texas A&M University. The research on nanotwinned Ag was funded by NSF-DMR Metallic Materials and Nanostructures Program, under Grant No. 0644835. See the technical theme that begins on page 274 .

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The Materials Research Society (MRS), a not-for-profit scientific association founded in 1973 and headquartered in Warrendale, Pennsylvania, USA, promotes interdisciplinary materials research. Today, MRS is a growing, vibrant, member-driven organization of over 16,000 materials researchers spanning over 80 countries, from academia, industry, and government, and a recognized leader in the advancement of interdisciplinary materials research.

The Society's interdisciplinary approach differs from that of single-discipline professional societies because it promotes information exchange across many scientific and technical fields touching materials development. MRS conducts three major international annual meetings and also sponsors numerous single-topic scientific meetings. The Society recognizes professional and technical excellence and fosters technical interaction through University Chapters. In the international arena, MRS implements bilateral projects with partner organizations to benefit the worldwide materials community. The Materials Research Society Foundation helps the Society advance its mission by supporting various projects and initiatives.

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