

# MRS Bulletin

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*Advancing materials. Improving the quality of life.*

## Materials for advanced semiconductor memories

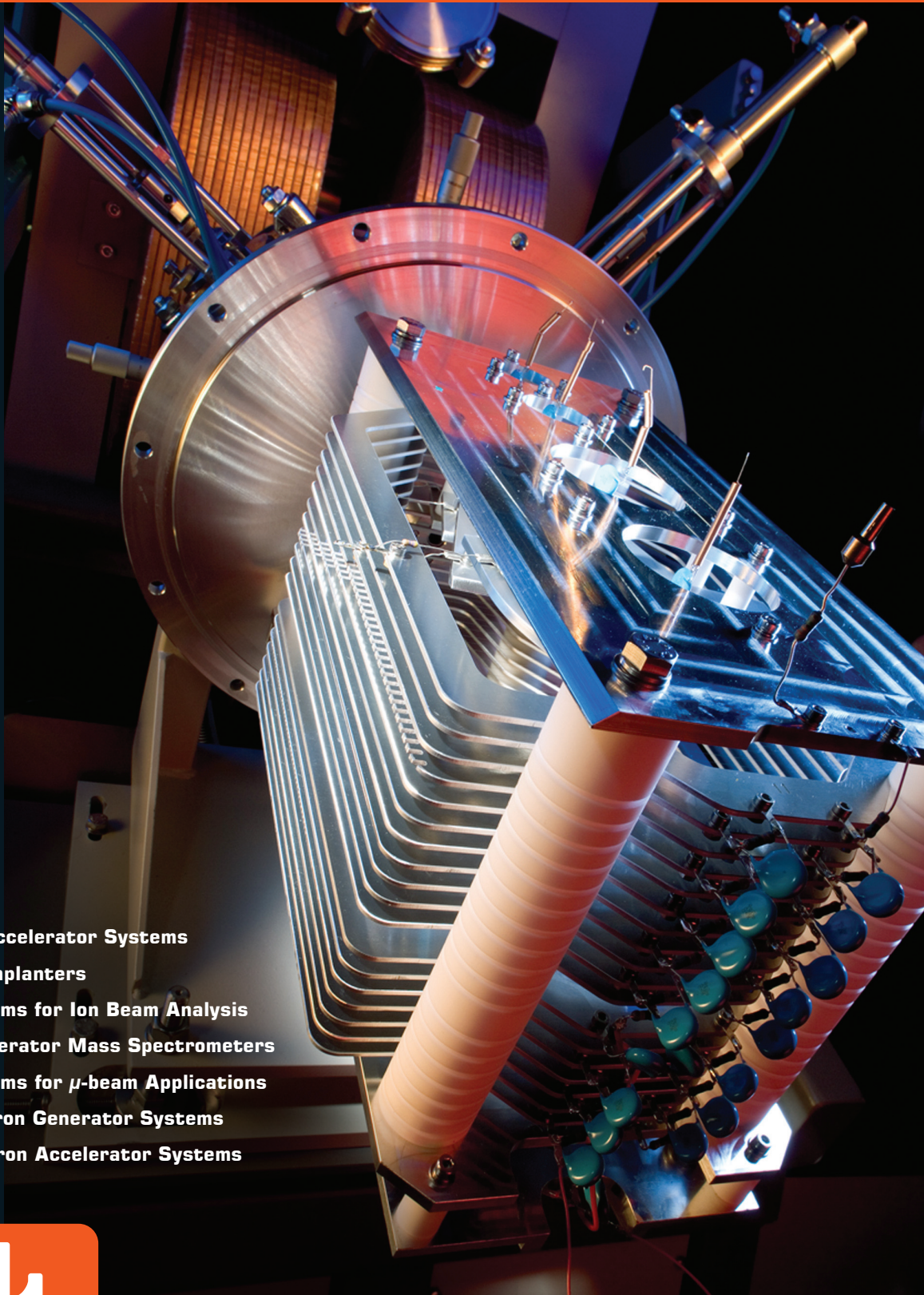
### ALSO IN THIS ISSUE

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An emerging tool for probing  
soft material assembly

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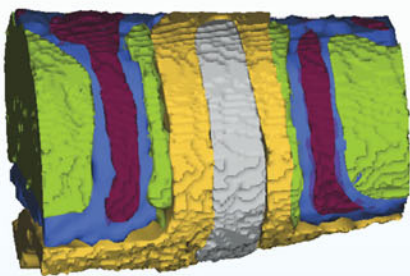
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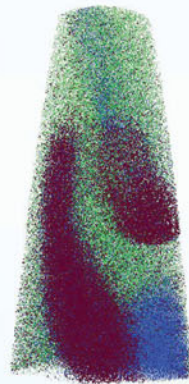
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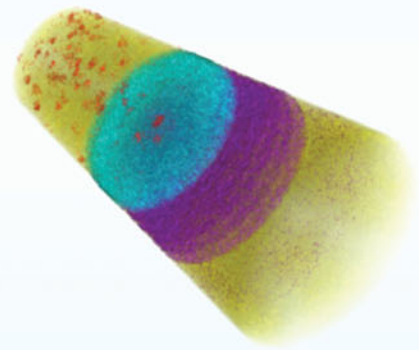
Atomic-level samples generated by APT reveal 3D chemical information not visible via other microscopy techniques.



3D volume showing the pure Si fin surrounded by the metal gate structure in a 14 nm microprocessor device



Boron segregation to a grain boundary in a Ni superalloy with carbide and boride precipitates



GaN LED device structure with Mg precipitation (red) and InGaN quantum well structure (purple)

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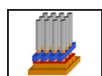
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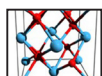
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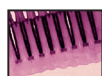
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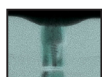
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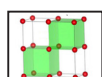
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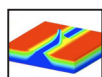
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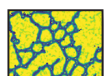
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**Materials for advanced semiconductor memories.** The need for emerging and new memory technologies with non-volatility and low power-consumption performance continues to rapidly increase, while improvements in current dynamic random-access memory and NAND flash are simultaneously being pursued. In both new and current memories, material innovation is of central importance. In this issue of *MRS Bulletin*,

recent advances in both of these critical areas are reviewed, with a focus on emerging and novel materials for disruptive memory concepts. The cover shows automated electrical testing of spintronics devices used as memory fabricated at SPINTEC, Grenoble, France. See the technical theme that appears on page 330.



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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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### The Fourth Annual *JMR* Issue to promote outstanding research by future leaders in materials science

This fourth Annual Issue invites full length research and review articles by materials researchers, who have completed their PhD degree but not yet achieved full professorship at the time of submission, for peer review and publication in the January 2019 issue. PhD students are not eligible to submit. The Annual Issue provides a unique opportunity to be highlighted and promoted early in one's research career. To increase attention to these papers, this issue will be published on an **open access** basis. Although some papers may have multiple authors, only the Early Career Scholar submitting the paper will be identified with a photo and brief bio when the paper is published. Authors from around the world are invited to submit papers that span the topical coverage of *JMR* including advanced ceramics, metals, polymers, composites, and combinations thereof related to energy, electrical, magnetic, optical, and structural properties and related applications and reporting on:

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