

# MRS Bulletin

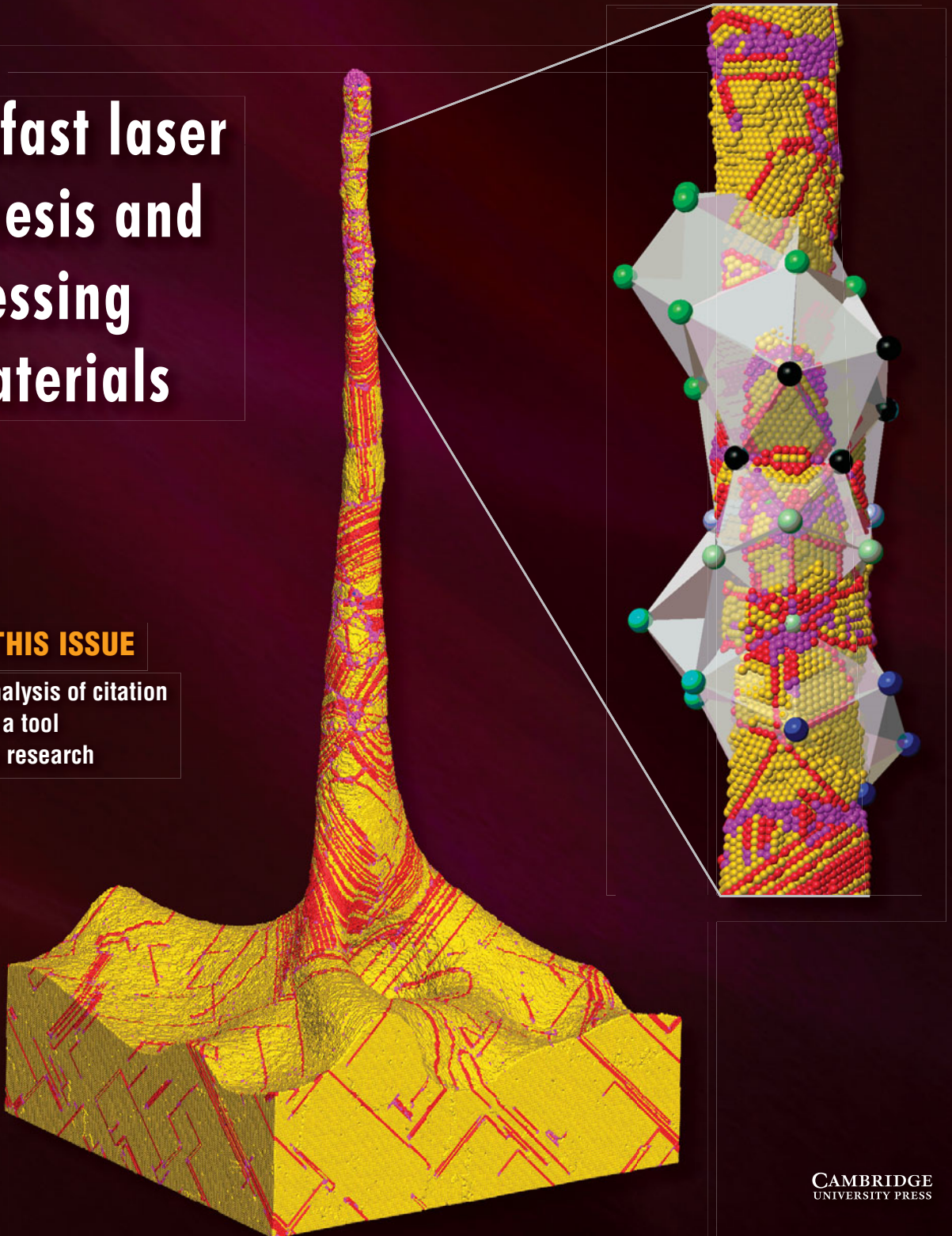
December 2016 Vol. 41 No. 12  
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## Ultrafast laser synthesis and processing of materials

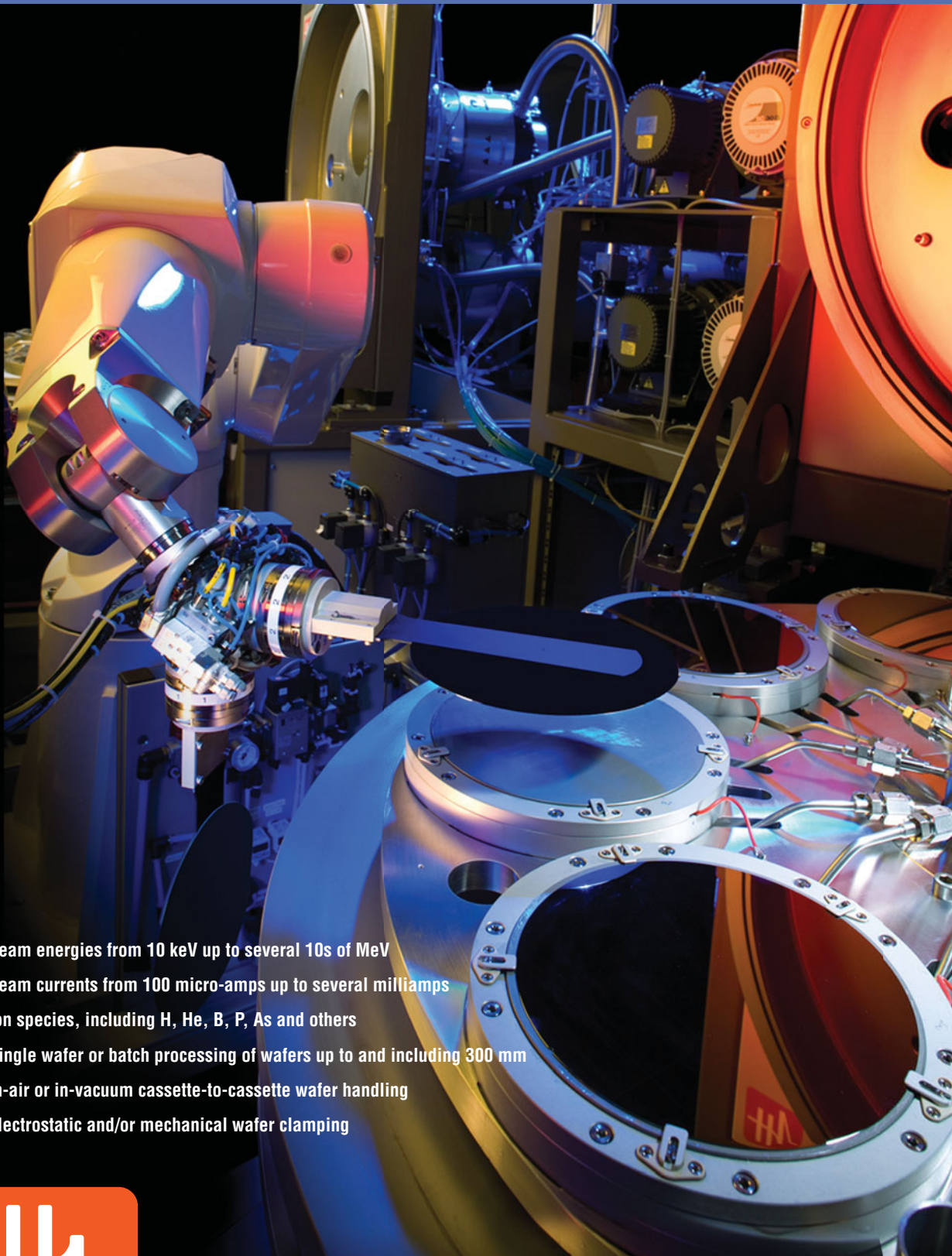
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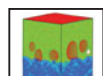
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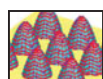
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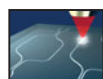
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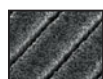
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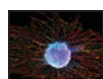
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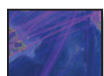
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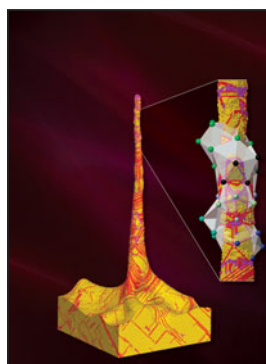
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### ON THE COVER

**Ultrafast laser synthesis and processing of materials.** Ultrafast laser–solid interactions have made a great deal of progress recently, especially in the understanding of atomistic mechanisms and dynamics controlling material response. This issue of *MRS Bulletin* discusses the fundamental interactions at the shortest time scales for a wide range of applications as well as other emerging opportunities of ultrafast laser synthesis

and processing. The cover image shows the formation of a polyicosahedral structure in a frozen nanospike in a molecular dynamics simulation of an Ag target irradiated by a 100 fs laser pulse. Analysis reveals a remarkable variability of structural motifs coexisting in the nanospike, including a region of continuous networks of pentagonal twinned structural elements arranged into the polyicosahedral structure. Fcc atoms are shown in yellow, stacking faults and twin boundaries are red, and other defects are purple. Image courtesy of the American Chemical Society (C. Wu, L.V. Zhigilei, *J. Phys. Chem. C* **120**, 4438 [2016]). See the technical theme that begins on page 955.

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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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