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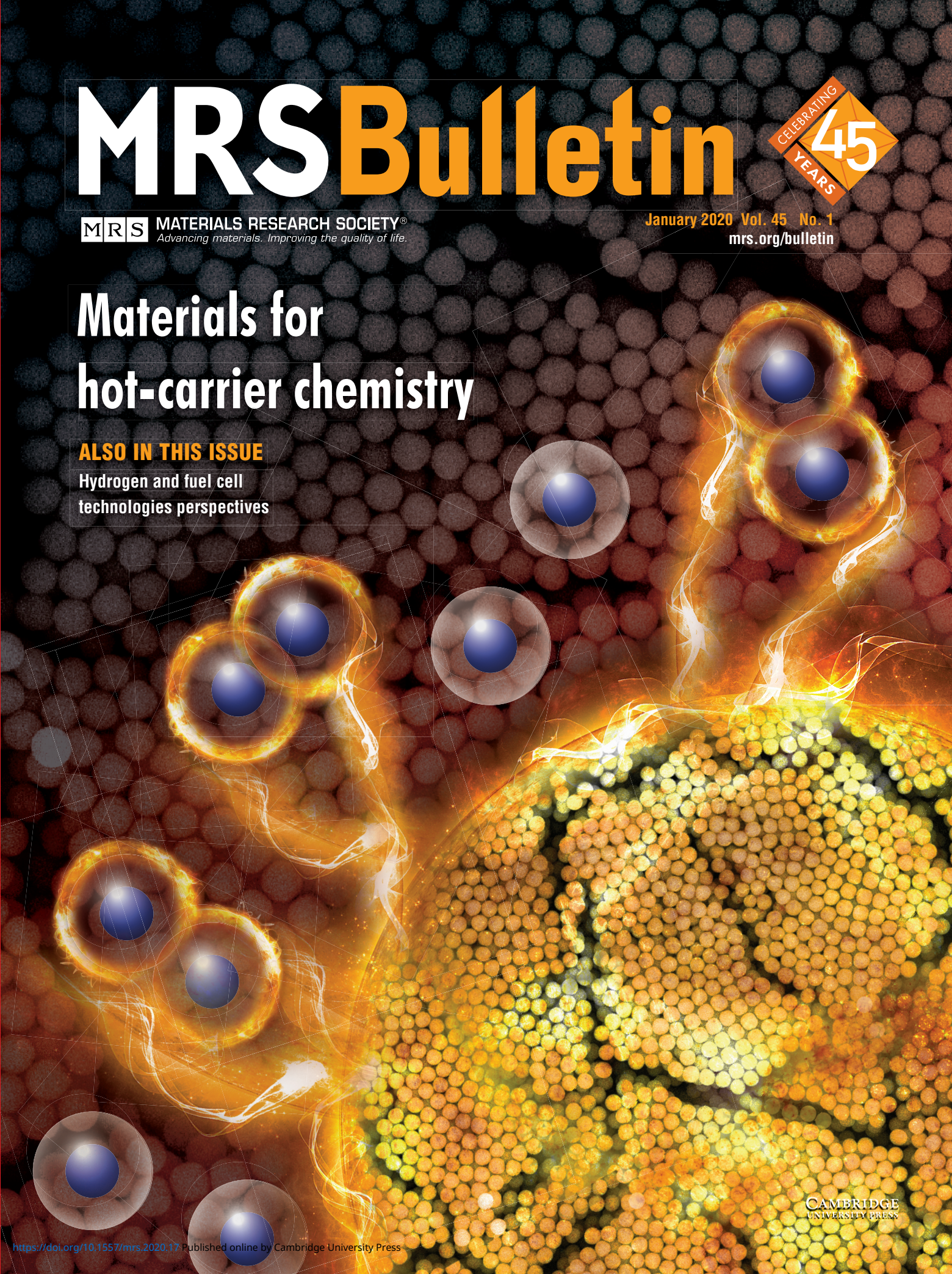
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January 2020 Vol. 45 No. 1
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Materials for hot-carrier chemistry

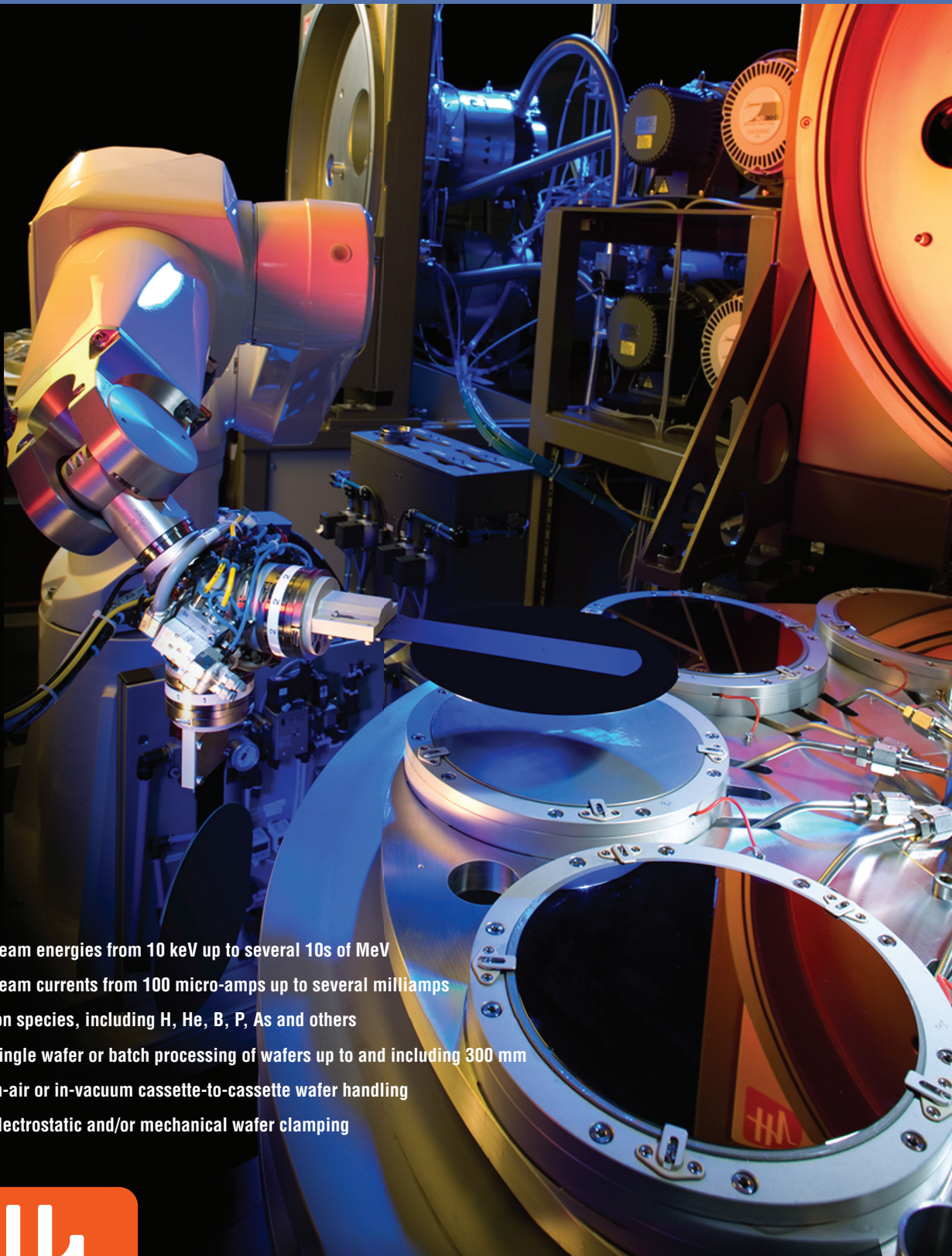
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JMR invites research and review articles by materials researchers who have completed their PhD but have not yet been appointed as full professor, or equivalent position in non-academic organizations, at the time of submission, for peer review and publication in this special issue. The Annual Issue provides a unique opportunity to be highlighted and promoted early in one's research career. To increase attention, the issue will be published on an **open access** basis. Although papers may have multiple authors, only the Early Career Scholar submitting the paper will be identified with a photo and brief bio on publication.

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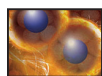
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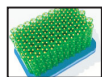
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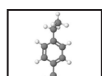
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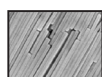
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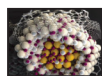


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ON THE COVER

Materials for hot-carrier chemistry. The promise of photoexcited hot-electron chemistry (and the complementary hot-hole chemistry) is supported by its application in many important reactions, including CO₂ reduction, water splitting, hydrogenation, and coupling reactions, highlighting its potential in achieving high energy-conversion efficiency and product selectivity. Hot-electron chemistry represents a fundamentally different solar energy-conversion mechanism compared to traditional photochemistry. This issue of *MRS Bulletin* examines the generation and relaxation of hot electrons in typical nanoparticle systems

upon light absorption and the flow of hot electrons across the surfaces of the nanoparticles. On the cover, the bottom right image is a photoexcited nanoparticle. The pairs of transparent balls with blue cores represent reactant molecules. The individual transparent balls with blue cores represent the product molecules, which are formed from the interaction of the reactant molecules with hot electrons on the surface of the nanoparticle. See the technical theme that begins on p. 20.



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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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