August 2019 Vol. 44 No. 8
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MRS Bulletin

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Joining of dissimilar lightweight materials

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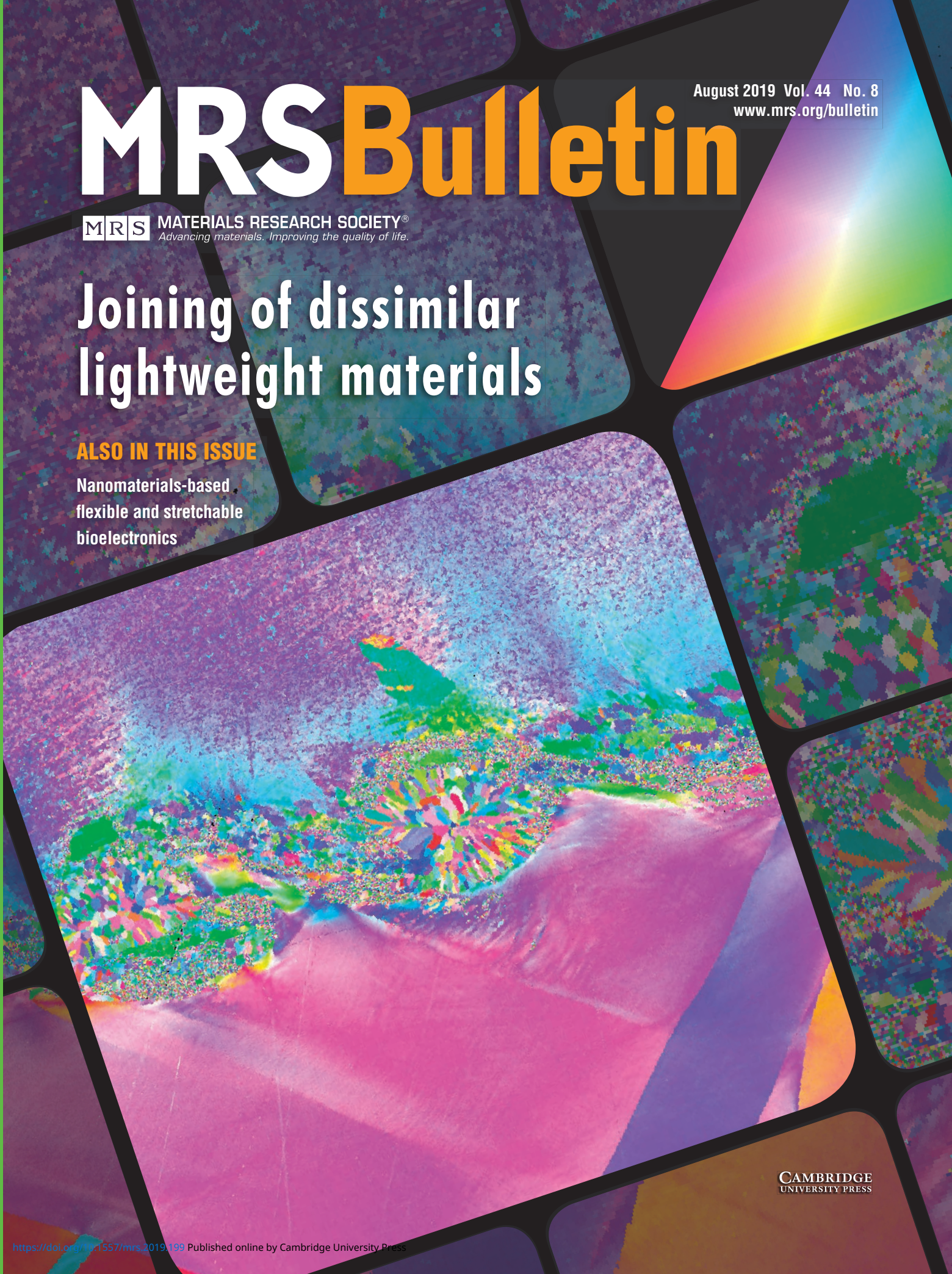

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https://doi.org/10.1557/mrs.2019.199 Published online by Cambridge University Press

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https://doi.org/10.1557/mrs.2019.199 Published online by Cambridge University Press

MRS Bulletin AUGUST 2019 VOLUME 44 Number 8 ISSN: 0883-7694 CODEN: MRSBEA

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JOINING OF DISSIMILAR LIGHTWEIGHT MATERIALS

TECHNICAL FEATURE

ON THE COVER

Joining of dissimilar lightweight materials. Assembling multimaterial structures is challenging because of differences in melting temperature, formation of intermetallic compounds, differences in coefficient of thermal expansion, and galvanic corrosion potential. While the number of joining techniques continues to grow, for high-volume production, there is a continued desire for a single joining method that can assemble advanced high-strength steel, aluminum, magnesium, and composite materials, and combinations of some of these materials, consistently and robustly. This is especially crucial for the transportation sector, since it is one of the largest contributors to greenhouse gas emissions, especially in the United States. Even small reductions in weight can have a significant effect on the fuel consumption and emissions of the transportation sector. The cover shows an electron backscatter diffraction image of impact-welded silver (top) and copper (bottom), with colors representing the orientations of grains in the two materials and the interface; this is one of the techniques showing great promise for dissimilar materials joining. Image courtesy of Taeseon Lee and Taylor Dittrich of The Ohio State University. See the technical theme that begins on p. **608**.

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Erratum: In the original publication of the article titled "DNA nanotechnology for building artificial dynamic systems" (July 2019), an incorrect image was used as the graphical abstract and the title page image. The Materials Research Society apologizes for this discrepancy. The online version of the article has been corrected appropriately. doi: 10.1557/mrs.2019.155.

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EDITORIAL OFFICE 506 Keystone Drive, Warrendale, PA 15086-7573 USA
Bulletin@mrs.org tel 724.779.2747 fax 724.779.8313 www.mrs.org

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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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