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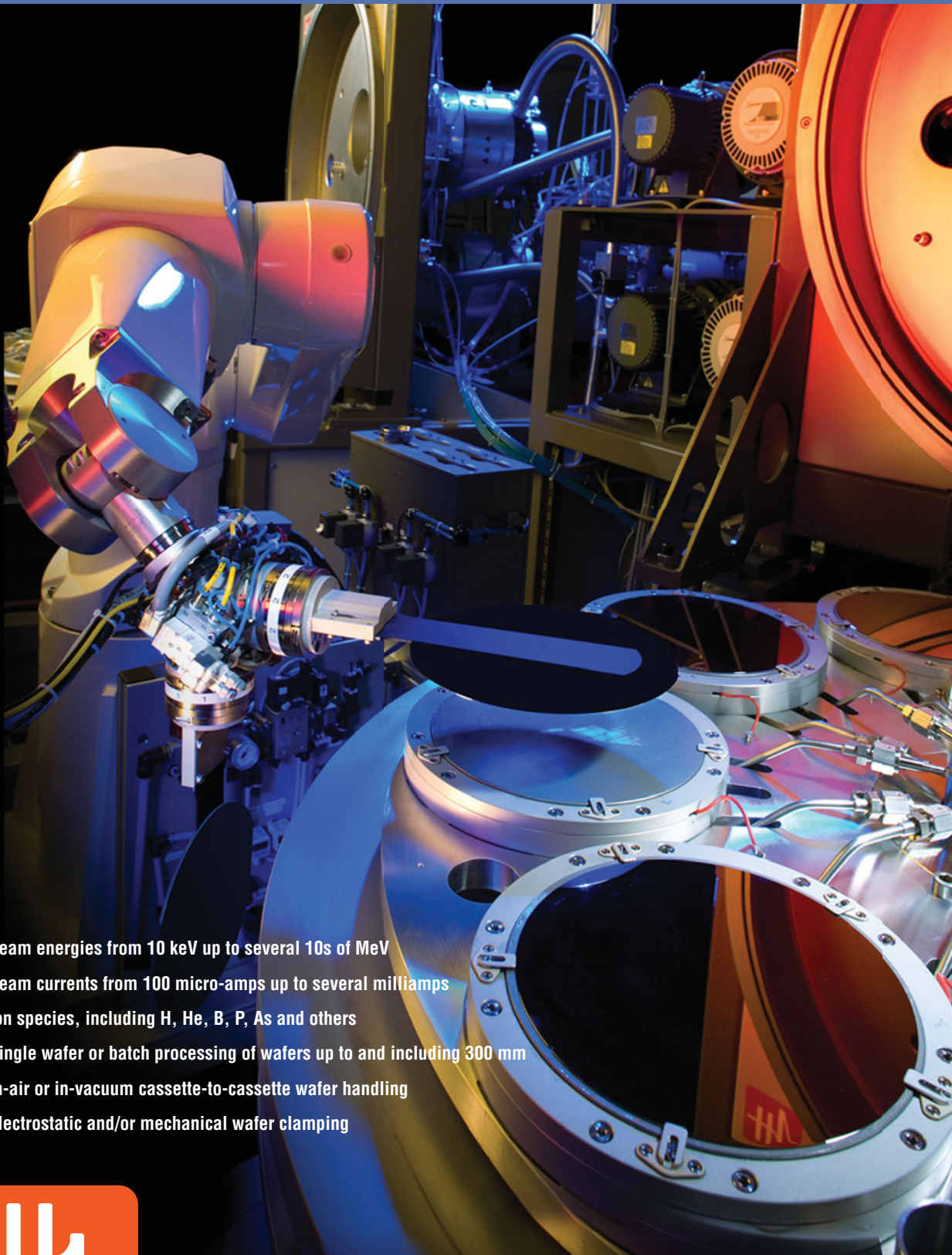
March 2015 Vol. 40 No. 3  
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## Materials challenges in 3D IC technology

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Plasmonic materials, methods  
to probe nanoscale phenomena

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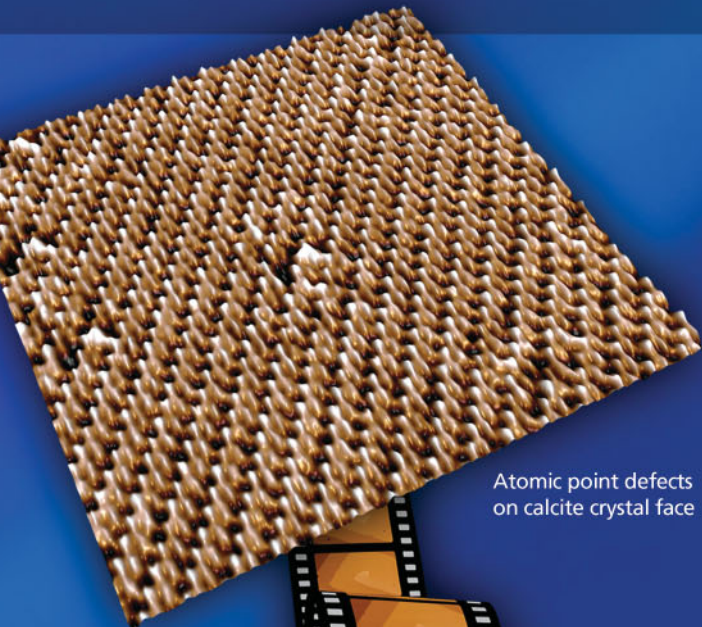


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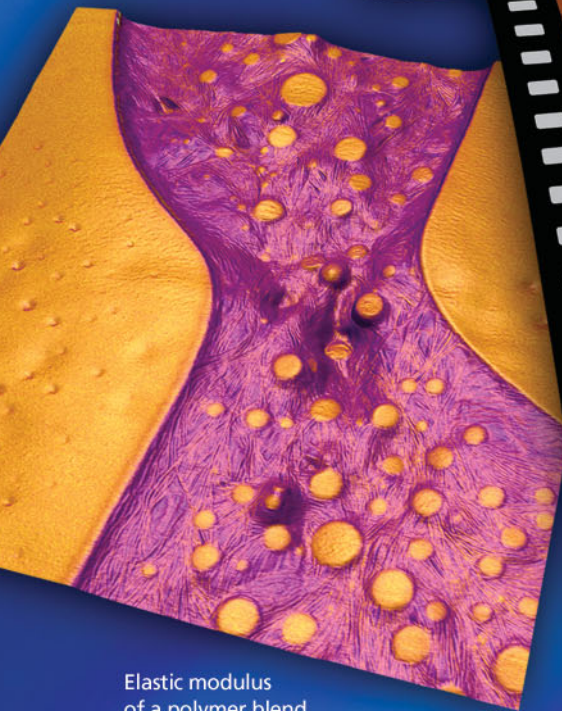
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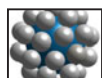
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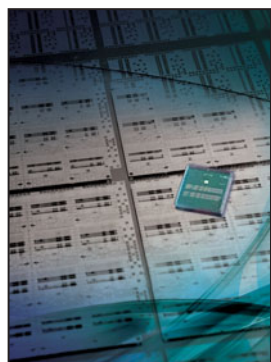
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**ON THE COVER**

**Materials challenges in 3D IC technology.** 3D ICs are based on vertical integration, where two or more electronic components are homogeneously or heterogeneously stacked. As Moore's Law nears its limits, 3D ICs are expected to deliver performance enhancement and heterogeneous integration in future electronic products by combining chip technology and packaging technology. The articles in this issue discuss

some of the materials challenges that need to be overcome to improve the current low yield and low reliability at high cost that are limiting applications of 3D ICs. The cover image shows a glass-Si bonded 3D chip that is placed above a glass device wafer and a Si device wafer. These wafers are ready for wafer-level bonding in the 3D IC process. See the technical theme that begins on page 219.



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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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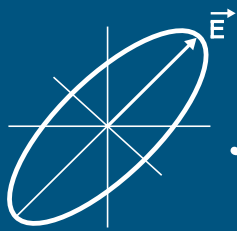
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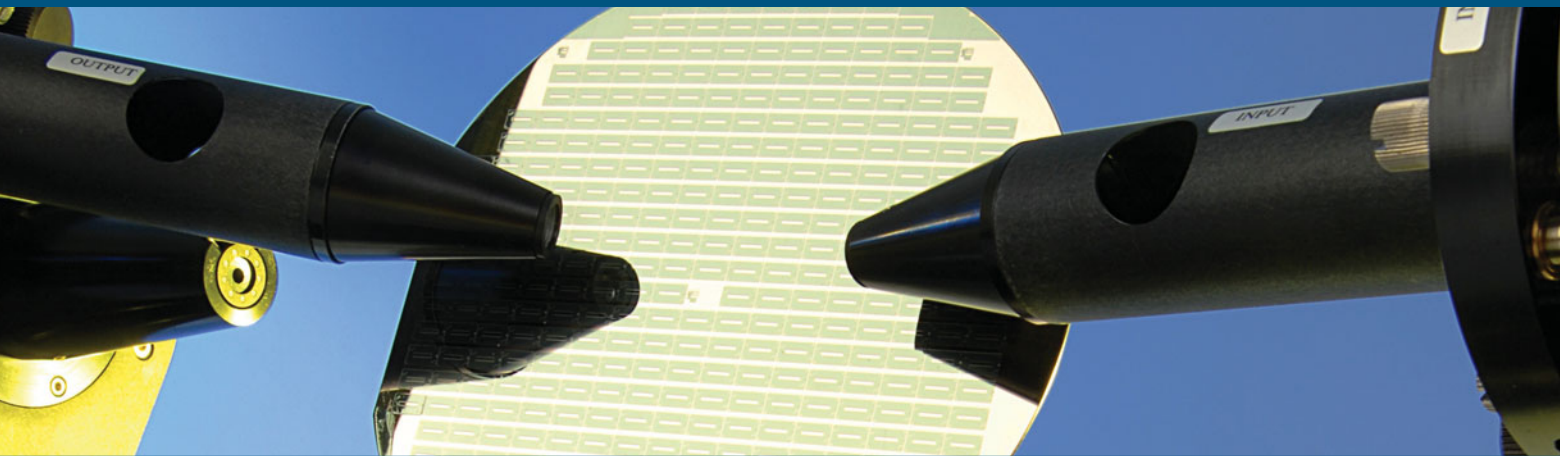
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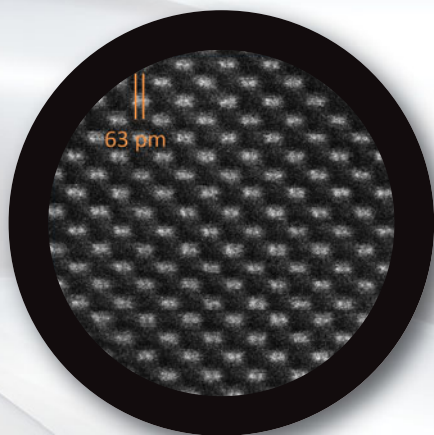
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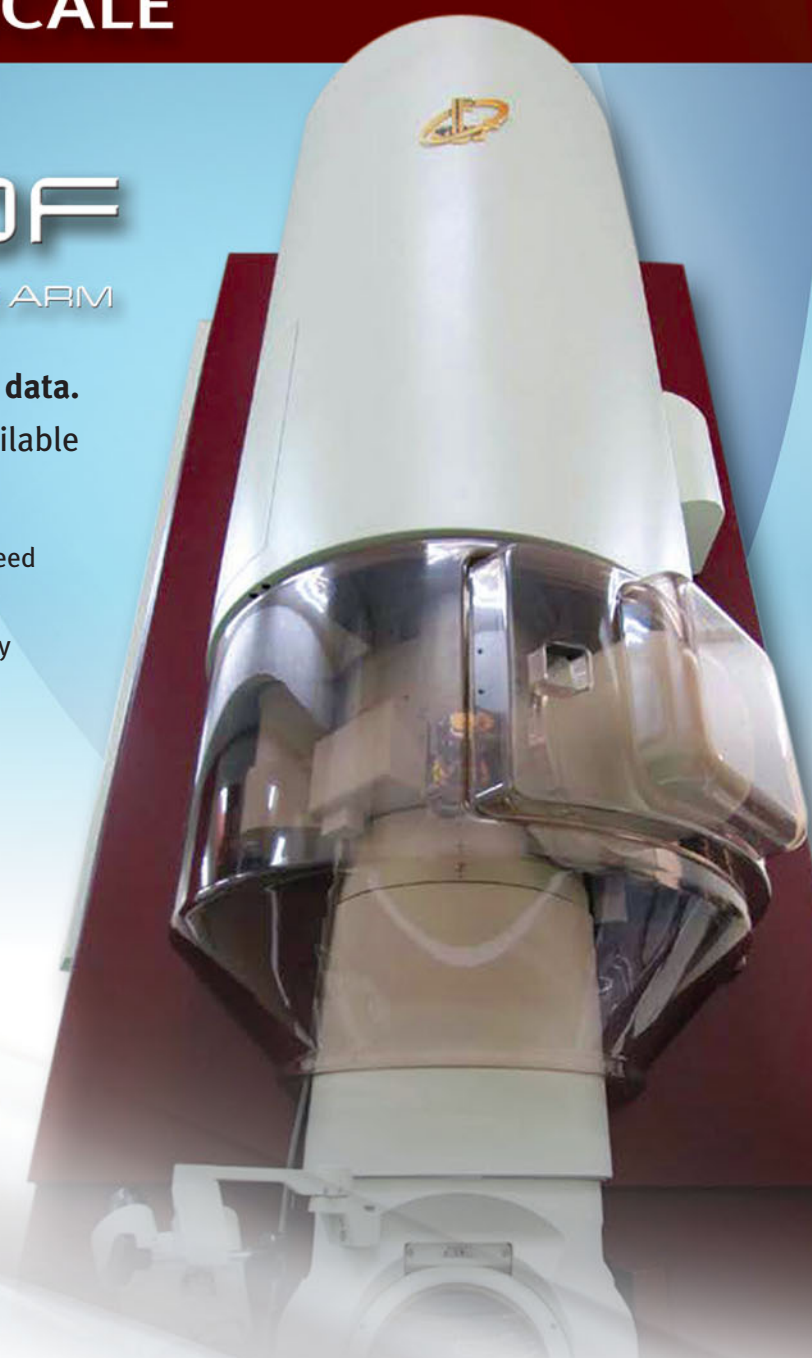
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