

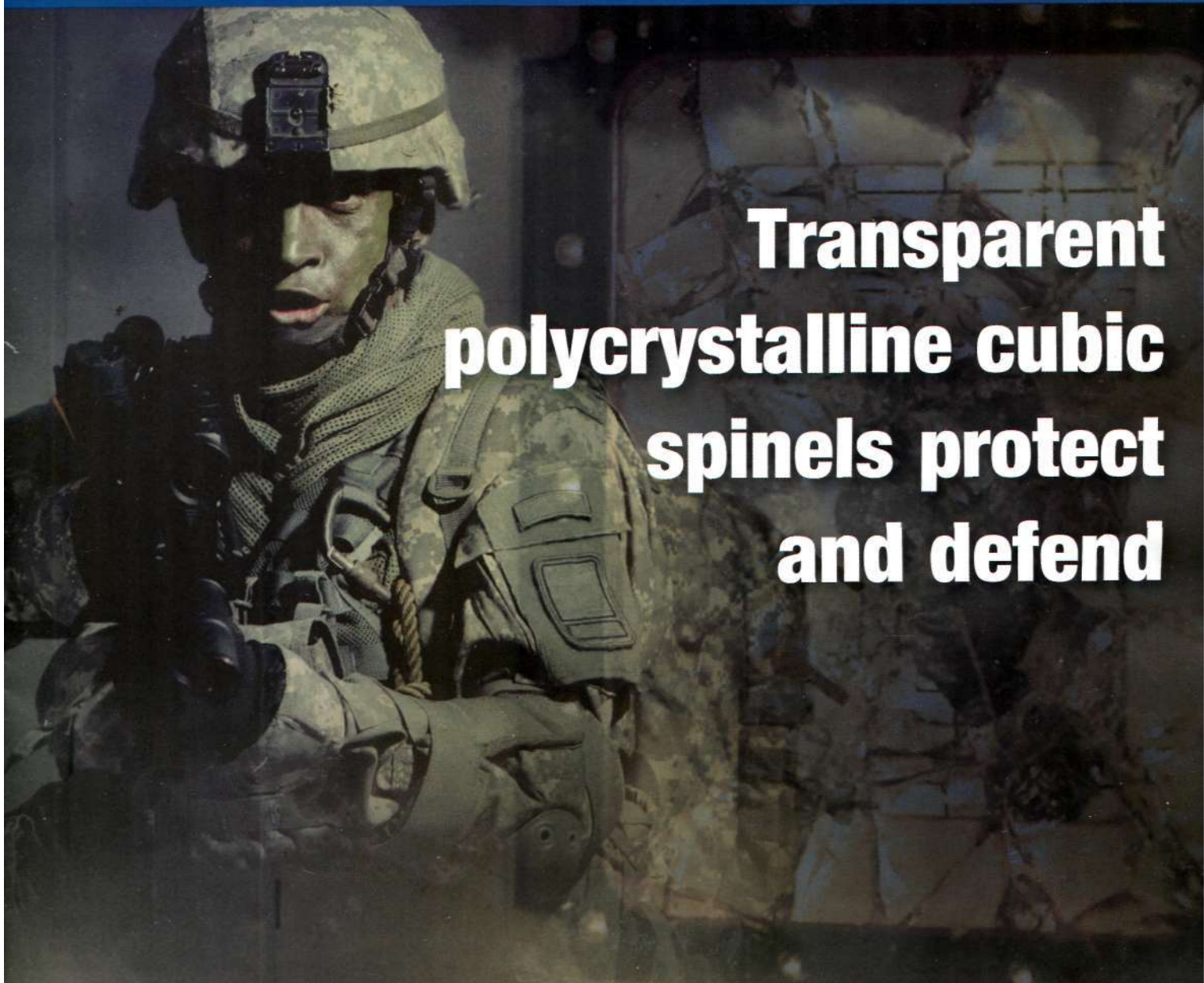
AMERICAN CERAMIC SOCIETY

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bulletin

emerging ceramics & glass technology

MARCH 2013



Transparent polycrystalline cubic spinel protect and defend

“Atoms to armor”—Army Research Lab’s new program •

New opportunities for transparent ceramics •

Art Division gets new name, broader mission •

President’s Council of Student Advisors •

Conference previews: St. Louis Section/RCD; PACRIM 10; UNITECR’13 •

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Mohan Ramisetty, Suri Sastri, Uday Kashalikar, Lee M. Goldman, and Nagrenda Nag

Aluminum oxynitride and magnesium-spinel are lightweight, strong, and transparent armor materials. Besides protecting soldiers and equipment, there are interesting optics applications for these materials, too.

"Atoms to armor"—Army invests in basic research to design new materials 26

Eileen De Guire

In this interview, Army Research Laboratory's chief scientist James McCauley tells how ARL is answering a challenge to design new materials from the atomic scale up with a \$120 million, potential 10-year basic research program.

New opportunities for transparent ceramics 32

Shi Chen and Yiquan Wu

From armor to lasers to medical imaging equipment, transparent polycrystalline ceramics deliver a unique mix of properties. This overview surveys the wide range of transparent ceramic compositions, the history of their development, and applications for these materials.

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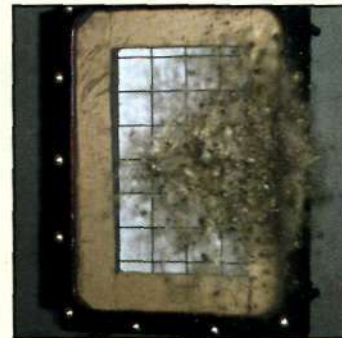
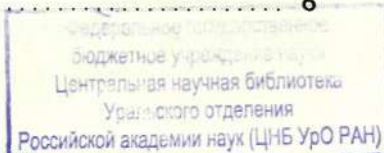
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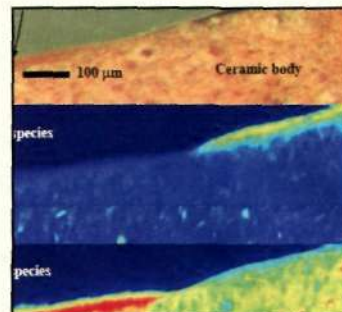


cover story

Transparent polycrystalline spinel armor protects soldiers and instruments, but these materials do much more than stop projectiles.

(Credit: Surmet.)

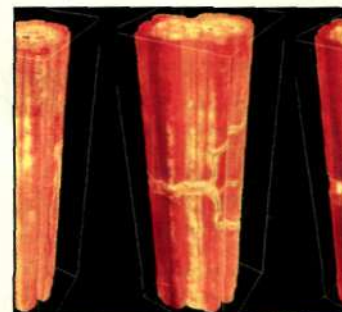
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The Society's Art Division recasts itself with a new name and bigger mission.

(Credit: Marc Walton; NSF.)

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research briefs

In-situ observation of micro-cracks in UHTCs at high-temperature with X-ray computed tomography

(Credit: Ritchie, LBNL.)

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