Inside: **Materials advances result from study of cold fusion**

November 2019 Vol. 44 No. 11
www.mrs.org/bulletin

MRS Bulletin

MRS MATERIALS RESEARCH SOCIETY®
Advancing materials. Improving the quality of life.

High-temperature materials for structural applications

CAMBRIDGE UNIVERSITY PRESS

https://doi.org/10.1557/mrs.2019.281 Published online by Cambridge University Press

https://doi.org/10.1557/mrs.2019.281 Published online by Cambridge University Press

The Norwegian Academy of Science and Letters
announces the

CALL FOR NOMINATIONS 2020

THE KAVLI PRIZE

For outstanding scientific research in

ASTROPHYSICS • NANOSCIENCE • NEUROSCIENCE

Nomination deadline: December 1, 2019

Nominations will be reviewed by committees of
leading international scientists appointed by

The Norwegian Academy of Science and Letters
based on recommendations by

The Chinese Academy of Sciences
The French Academy of Sciences
The Max Planck Society (Germany)
The National Academy of Sciences (US)
The Royal Society (UK)

The Kavli Prize will be awarded in Oslo in September 2020
and will consist of

A gold medal • US $ 1,000,000 • A scroll

For details about the nomination process see

www.kavliprize.org

A partnership of

THE NORWEGIAN MINISTRY
OF EDUCATION AND RESEARCH

THE KAVLI FOUNDATION

THE NORWEGIAN ACADEMY OF SCIENCE AND LETTERS

https://doi.org/10.1557/mrs.2019.281 Published online by Cambridge University Press

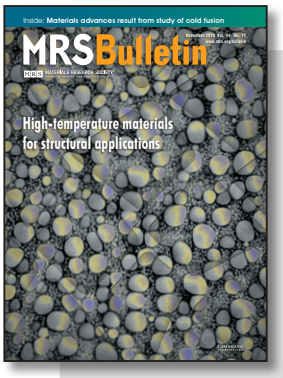
MRS Bulletin NOVEMBER 2019 VOLUME 44 Number 11 ISSN: 0883-7694 CODEN: MRSBEA

CONTENTS

HIGH-TEMPERATURE MATERIALS FOR STRUCTURAL APPLICATIONS

DEPARTMENTS

OPINION



ON THE COVER

High-temperature materials for structural applications. Advances in metallurgy and metal mixology, together with high-performance computing, high-resolution microscopy, and advanced spectroscopy methods, reveal the potential of multicomponent advanced metals, such as multicomponent bulk metallic glasses and advanced high-entropy alloys for high-temperature structural applications. This issue of *MRS Bulletin* overviews the progress and directions for these multicomponent alloys for high-temperature structural applications. The cover shows the microstructure of a $Ni_{44}Co_{15}Cr_{12}Fe_{13}Al_{10}Ti_6$ precipitation-hardened high-entropy alloy after aging, showing high-density $L1_2$-type precipitates embedded in a fcc matrix. The high-entropy approach provides new opportunities for obtaining preferred precipitate size, morphological shape, and composition, as well as tailoring lattice misfit between the matrix and the precipitation, important for high-temperature applications. Image courtesy of Boxuan Cao, City University of Hong Kong. See the technical theme that begins on page **847**.

COMING IN DECEMBER
Cryogenic Electron Microscopy Techniques for Materials Science

https://doi.org/10.1557/mrs.2019.281 Published online by Cambridge University Press

MRS MATERIALS RESEARCH SOCIETY®
Advancing materials. Improving the quality of life.
www.mrs.org/bulletin

NEWS & ANALYSIS

SOCIETY NEWS

FEATURES

900 CAREER CENTRAL

www.mrs.org/bulletin
www.mrs.org/energy-quarterly
www.mrs.org/mymrs
http://journals.cambridge.org
mrsbulletin-rss
@mrsbulletin

https://doi.org/10.1557/mrs.2019.281 Published online by Cambridge University Press

MRS MATERIALS RESEARCH SOCIETY®
Advancing materials. Improving the quality of life.

MRS Bulletin

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

About the Materials Research Society

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.

MRS Bulletin (ISSN: 0883-7694, print; ISSN 1938-1425, online) is published monthly by the Materials Research Society, 506 Keystone Drive, Warrendale, PA 15086-7573. Permission required to reproduce content. Periodical postage paid at New York, NY, and at additional mailing offices. POSTMASTER: Send address changes to *MRS Bulletin* in care of the Journals Department, Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994-2113, USA. Printed in the U.S.A.

Membership in MRS is $130 annually for regular members, $32 for students, and includes an electronic subscription to *MRS Bulletin.* Print subscriptions are available to MRS members for an additional $25. Individual member subscriptions are for personal use only. Non-member subscription rates are $588 (USD) for one calendar year (12 issues). Requests from subscribers for missing journal issues will be honored without charge only if received within six months of the issue's actual date of publication.

MRS Bulletin is included in Current Contents®/Engineering, Computing, and Technology; Current Contents®/Physical, Chemical, and Earth Sciences, the SciSearch® online database, Research Alert®, Science Citation Index®, and the Materials Science Citation Index™. Back volumes of *MRS Bulletin* are available on microfiche through University Microfilms Inc., 300 North Zeeb Road, Ann Arbor, MI 48106, USA.

Send Letters to the Editor to **Bulletin@mrs.org**. Include your name, affiliation, and full contact information.

https://doi.org/10.1557/mrs.2019.281 Published online by Cambridge University Press