

# MRS SYMPOSIUM PROCEEDINGS

Volume 1611 • IMRC 2013

## Advanced Structural Materials—2013

EDITOR

Hector A. Calderon

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# **Advanced Structural Materials—2013**

**MATERIALS RESEARCH SOCIETY  
SYMPOSIUM PROCEEDINGS VOLUME 1611**

# **Advanced Structural Materials—2013**

Symposium held August 11–15, 2013, Cancún, Mexico

**EDITOR**

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Materials Research Society  
Warrendale, Pennsylvania



CAMBRIDGE UNIVERSITY PRESS  
Cambridge, New York, Melbourne, Madrid, Cape Town,  
Singapore, São Paulo, Delhi, Mexico City

Cambridge University Press  
32 Avenue of the Americas, New York, NY 10013-2473, USA

[www.cambridge.org](http://www.cambridge.org)  
Information on this title: [www.cambridge.org/9781605115887](http://www.cambridge.org/9781605115887)  
Materials Research Society  
506 Keystone Drive, Warrendale, PA 15086  
<http://www.mrs.org>

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First published 2014

CODEN: MRSPDH

ISBN: 978-1-60511-588-7 Hardback

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## PREFACE

This volume is a compilation of papers that were presented at the Symposium 4A: “Advanced Structural Materials” of the XXII International Materials Research Congress, organized in collaboration with MRS, which was held from August 11 to 15, 2013 in Cancún, Mexico. The symposium was devoted to fundamental and technological applications of structural materials, and continued the tradition of providing a forum for scientists from various backgrounds with a common interest in the development and use of structural materials to come together and share their findings and expertise.

The papers contained in this volume are a collection of invited and contributed papers. This year, participants from Brazil, Canada, Colombia, Czech Republic, France, Japan, Korea, Mexico, Poland, Turkey, Spain, the United States, Trinidad Tobago, Ukraine and the United Kingdom attended the symposium. All papers have been thoroughly reviewed by at least two referees and edited to the standards of the Materials Research Society. We are grateful to all those referees who, by their comments and constructive criticism, helped to improve the finally printed papers, and to all the authors who made additional efforts to prepare their manuscripts.

The “Advanced Structural Materials” symposium has been held for the last 19 years with the objective of presenting overviews and recent investigations related to advanced structural metallic, ceramic and composite materials. The topics include innovative processing, phase transformations, mechanical properties, oxidation resistance, modeling and the relationship between processing, microstructure and mechanical behavior. Additionally, papers on industrial application and concrete are included.

The organizing committee gratefully acknowledges the enthusiastic cooperation of all symposium participants, as well as the kind acceptance of the editorial committee of Materials Research Society to publish these proceedings. The financial support of the Instituto Politécnico Nacional (IPN, Mexico), CONACYT (grant CIAM 148304) and the Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (CINVESTAV-IPN) is also acknowledged. We hope all readers will come to consider the “Advanced Structural Materials” symposium in Cancún as a suitable forum to present the results from their recent research and experience.

Greetings from the Organizing Committee:

Heberto Balmori-Ramírez (Instituto Politécnico Nacional)  
Hector A. Calderon-Benavides (Instituto Politécnico Nacional)  
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