

MRS **Advances**

International Materials Research Congress XXV

<https://doi.org/10.1557/adv.2017.567> Published online by Cambridge University Press

MRS Advances: International Materials Research Congress XXV

Associate Editor:

David F. Bahr, *Purdue University*

Principal Editors:

Ramiro Pérez Campos, *Universidad Nacional Autónoma de México*

Antonio Contreras Cuevas, *Instituto Mexicano del Petróleo*

Rodrigo A. Esparza Muñoz, *Universidad Nacional Autónoma de México*

Jesus A. Arenas Alatorre, *Universidad Nacional Autónoma de México*

MRS Advances Editorial Board:

Editor-in-Chief: David F. Bahr, *Purdue University*

Asa Barber, *University of Portsmouth, United Kingdom*

Meenakshi Dutt, *Rutgers University*

Elizabeth L. Fleischer, *Materials Research Society*

Marian Kennedy, *Clemson University*

Marilyn L. Minus, *Northeastern University*

Roger J. Narayan, *University of North Carolina/North Carolina State University*

Jeremy Theil, *Mountain View Energy*

Materials Research Society Editorial Office, Warrendale, PA:

Ellen W. Kracht, *Publications Manager*

Susan Dittrich, *Journals Editorial Assistant*

Kirby L. Morris, *Journals Production Assistant*

Eileen M. Kiley, *Director of Communications*

Disclaimer

Authors of each article appearing in this Journal are solely responsible for all contents in their article(s) including accuracy of the facts, statements, and citing resources. Facts and opinions are solely the personal statements of the respective authors and do not necessarily represent the views of the editors, the Materials Research Society, or Cambridge University Press.

MRS Advances (EISSN: 2059-8521) is published by Cambridge University Press, One Liberty Plaza, Floor 20, New York, NY 10006 for the Materials Research Society.

Copyright © 2017, Materials Research Society. All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronic, photocopying, or otherwise, without permission in writing from Cambridge University Press. Policies, request forms and contacts are available at: <http://www.cambridge.org/rights/permissions/permission.htm>. Permission to copy (for users in the USA) is available from Copyright Clearance Center at: <http://www.copyright.com>, email: info@copyright.com.

Purchasing Options:

Premium Subscription- Premium Subscription includes current subscription and one year's lease access to the full MRS Online Proceedings Library Archive for \$7,219.00 / £4,888.00 / €6,647.00. *Subscription-* Subscription with perpetual access to the content subscribed to in a given year, including three years of back-file lease access to content from the MRS Online Proceedings Library Archive. The price for a 2017 subscription is \$3,019.00 / £1,948.00 / €2,625.00. *MRS Members-* Access to *MRS Advances* is available to all MRS members without charge.

Contact Details:

For all inquiries about pricing and access to *MRS Advances*, please get in touch via the following email addresses: online@cambridge.org (for the Americas); library.sales@cambridge.org (for UK, Europe, and rest of world).

cambridge.org/adv

CONTENTS

Preface v

STRUCTURAL AND CHEMICAL CHARACTERIZATION OF METALS AND ALLOYS

**Kinetic Study of the Growth of Hard Layers on a
Low Carbon Steel 2809**
Daniel S. Huerta, E.D. García Bustos,
D.V. Melo Máximo, and M. Flores Martinez

**Electrochemical Assessment of X70 Steel With
Non-conventional Heat Treatment 2819**
L.R. Jacobo, R. García, V.H. López,
and A. Contreras

**Microstructure and Mechanical Properties of Copper,
Nickel and Ternary Alloys Cu-Ni-Zr Obtained by
Mechanical Alloying and Hot Pressing 2831**
C. Martínez, F. Briones, P. Rojas, S. Ordoñez,
C. Aguilar, and D. Guzmán

**Effect of the Metallic Aging on the Microstructure and
Mechanical Properties of Titanium Alloy 2837**
T.J. Sánchez-Rosas, J.D. Muñoz-Andrade,
M. Aguilar-Sánchez, B. Vargas-Arista,
and E. Garfias-García

**Aluminum Composites Reinforced With Graphite:
A Densification and Mechanical Response Study 2847**
J.M. Mendoza-Duarte, F.C. Robles-Hernandez,
I. Estrada-Guel, C. Carreño-Gallardo,
and R. Martínez-Sánchez

**Characterization Microstructural and Electrochemical of
AgPd Alloy Bimetallic Nanoparticles 2857**
A. Santoveña, C. Rodriguez-Proenza,
J.A. Maya-Cornejo, A. Ruiz-Baltazar,
D. Bahena, J. Ledesma, R. Pérez,
and R. Esparza

Characterization of TiC/Ni Composite Immersed in Synthetic Seawater	2865
J.M. Durán-Olvera, R. Orozco-Cruz, R. Galván-Martínez, C.A. León, and A. Contreras	
CdTe, ZnTe and Cd_{1-x}Zn_xTe Nanolayers Grown by Atomic Layer Deposition on GaSb and GaAs (001) Oriented Substrates	2875
J.E. Flores-Mena, R.S. Castillo-Ojeda, J. Díaz-Reyes, M. Galván-Arellano, and F. de Anda-Salazar	
Characterization of LPE-Ga_{0.86}In_{0.14}As_{0.13}Sb_{0.87}	2883
J. Díaz-Reyes, J.S. Arias-Cerón, J.G. Mendoza-Álvarez, and J.L. Herrera-Pérez	

MRS Advances © 2017 Materials Research Society
DOI: 10.1557/adv.2017.566

PREFACE

This MRS Advances issue contains papers on the topic of “Structural and Chemical Characterization of Metals and Alloys.” This special issue covers several aspects of the structural and chemical characterization of materials in the following areas: metals, alloys, steels, composites, polymeric compounds, welding, nanomaterials, and surface coatings, among others. They are amorphous, crystalline, powders, coatings, fibers, thin films, and so forth, which were prepared with different techniques. The structural characterization techniques include: scanning electron microscopy (SEM), X-ray diffraction (XRD), transmission electron microscopy (TEM), Raman spectroscopy, optical microscopy (OM), Fourier transform infrared spectroscopy (FTIR), differential thermal analysis (DTA), differential scanning calorimetry (DSC), thermogravimetry analysis (TGA), thermo luminescence (TL), laser emission, and so forth. Theoretical models from these properties are included too.

Dr. Ramiro Pérez Campos
Dr. Antonio Contreras Cuevas
Dr. Rodrigo A. Esparza Muñoz
Dr. Jesus A. Arenas Alatorre
Editors

August, 2016