
**Structural and Chemical Characterization of Metals,
Alloys, and Compounds—2014**

**MATERIALS RESEARCH SOCIETY
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Structural and Chemical Characterization of Metals, Alloys, and Compounds—2014

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EDITORS

Ramiro Pérez Campos

Centro de Física Aplicada y Tecnología Avanzada, UNAM
Querétaro, México

Antonio Contreras Cuevas

Instituto Mexicano del Petróleo
San Bartolo Atepehuacan, México

Rodrigo A. Esparza Muñoz

Centro de Física Aplicada y Tecnología Avanzada, UNAM
Querétaro, México



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Shaftesbury Road, Cambridge CB2 8EA, United Kingdom

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PREFACE

The XXIII International Materials Research Congress was held on August 17–21, 2014, in Cancún, Mexico. It was organized by the Sociedad Mexicana de Materiales (SMM). About 1,500 specialized scientists from more than 40 countries participated in the 30 different symposia, workshops, plenary lectures and tutorial courses. The 30 symposia that comprise the technical program of IMRC 2014 are grouped in several clusters, namely: Nanoscience and Nanotechnology, Biomaterials, Materials for Energy, Fundamental Materials Science, Materials Characterization, Materials for Specific Applications, Magnetic and Electronic Materials and General.

This Materials Research Society Proceedings volume contains papers presented at the Symposium 5B “Structural and Chemical Characterization of Metals, Alloys and Compounds” of the XXIII International Materials Research Congress. This event is intended to be a forum for the dissemination of research results on materials research. The participants and the organizers have found this event to be very successful due to the high quality and novelty of the scientific results presented. Among the important achievements of the symposium are the new personal contacts among the scientists for the creation of multinational thematic and research networks, as well as promoting contacts for future collaboration.

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.

The scientific program of Symposium 5B includes 69 oral and 144 poster presentations. In addition, this year the invited talks were focused on X-ray diffraction technique applied to the characterization of materials. This special issue contains 20 papers based on contributions presented during the symposium. All manuscripts included in this special issue have been accepted after peer review.

Dr. Ramiro Pérez Campos
Dr. Antonio Contreras Cuevas
Dr. Rodrigo A. Esparza Muñoz

December, 2014

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Additionally, we would like to thank those who have worked to make this congress an exciting and fruitful meeting: meeting chairs, symposia organizers, IMRC staff, MRS staff, editors, management committee, advisory committee, and Sociedad Mexicana de Materiales (SMM).

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