Structural and Chemical Characterization of Metals, Alloys and Compounds—2012

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Structural and Chemical Characterization of Metals, Alloys and Compounds—2012

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PREFACE

The XXI International Materials Research Congress was held in Cancun México from 12 to 17 August 2012. It was organized by Mexican Materials Society (SMM). About 1300 specialized scientists from more than 40 countries participated in the 28 different symposium, workshops, plenary lectures and tutorial courses. The 28 symposia that comprise the technical program of IMRC 2012 are grouped in several clusters, namely: Nanoscience and Nanotechnology, Materials Characterization, Materials for Energy Production, Biomaterials, Polymers, Electronic and Photonic Materials, Fundamentals Materials Science and General (Strategy for academy-industry relationship).

This Materials Research Society Proceedings contains papers presented at the Symposium 2D "Structural and Chemical Characterization of Metals, Alloys and Compounds" of the XXI 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 very successful due to the high quality and novelty of the scientific results presented. Among the important achievements of the symposium were the new personal contacts between 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 the 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, etc., which were prepared with different techniques. The structural characterization techniques included: 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, etc. Theoretical models from these properties are included too.

The scientific program of symposium 2D included 67 oral and 146 poster presentations. In addition, invited talks were focused on different topics like X-ray diffraction, characterization of coatings and characterization of nanostructured materials. The special issue contains 16 papers based on contributions presented on the symposium. All manuscripts included in this special issue have been accepted after peer review.

We would like to express our deep acknowledgement to the Mexican Materials Society Advisory Committee, as well as sincere thanks to the reviewers for their valuable assistance and help in the review process. We also would like to thank the Mexican Materials Society (SMM), National University of México (UNAM) and Mexican Petroleum Institute (IMP) for the support in organization of the symposium.

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Editors

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Additionally, we would like to thank all 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 Materials Research Society of México.

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