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PREFACE

The XXII International Materials Research Congress was held August 11–15, 2013, in Cancún, Mexico. It was organized by the Sociedad Mexicana de Materiales (SMM). Approximately 1,400 scientists from more than 46 countries participated in 30 different symposia, workshops, plenary lectures, and tutorial courses.The symposia that comprise the technical program of IMRC 2013 are grouped in several clusters, namely: Nanoscience and Nanotechnology, Biomaterials, Materials for Energy, Fundamentals Materials Science, Materials Characterization, Materials for Environmental Applications, Magnetic and Electronic Materials, and General.

This Materials Research Society Proceedings volume contains papers presented at the Symposium 5C "Structural and Chemical Characterization of Metals, Alloys and Compounds" of the XXII 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 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 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, 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), thermogravimetryanalysis (TGA), thermo luminescence (TL), laser emission, and so forth. Theoretical models from these properties are included too.

The scientific program of Symposium 5C includes 69 oral and 131 poster presentations. In addition, invited talks were focused on different topics, like thin hard coatings, characterization of weldments, and characterization of nanostructured materials by SEM. This volume contains 11 papers based on contributions presented at the symposium. All manuscripts included in this volume 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 Sociedad Mexicana de Materiales (SMM), Universidad Nacional Autónoma de México (UNAM), and Instituto Mexicano del Petróleo (IMP) for their support in the organization of the symposium.

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