Special Issue on Joining Technology for New Metallic Glasses and Inorganic Materials — Selected Papers from the IUMRS International Conference in Asia 2008 (IUMRS-ICA2008)

PREFACE

This special issue includes selected papers from IUMRS-ICA2008 on Joining Technology for New Metallic Glasses and Inorganic Materials. The conference has been held in Nagoya, Japan on December 10–12, 2008, as a series of the Joining Technology Conferences previously held in Shonan (May, 2007) and Kurashiki (September, 2006). This conference was attended by 103 participants—approximately 66% from Japan and 34% from 8 other countries. The number of scientists working on this research subject in our host country Japan has increased significantly as compared to the past. This is a result of a broad support by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The Conference lasted two and a half days and consisted of 48 oral presentations and 51 posters, and 26 of the 48 oral presentations were invited.

In the new project on Joining Technology for New Metallic Glasses and Inorganic Materials which has been organized in cooperation among the research groups at three institutes; Institute for Materials Research, Tohoku University; Joining and Welding Research Institute, Osaka University; and Materials and Structure Laboratory, Tokyo Institute of Technology, our aims are to create new functional materials such as metallic glasses and ceramics, as well as to develop a joining/welding technology to produce and study hybrid materials. The new field consists of (1) Development of Materials for Environment and Energy System Fields, (2) Development of Electronic Materials, (3) Creation of Advanced Bionics Materials, (4) Development of Joining Process Controlling Interface of Nano-scale Structure and (5) High Functional Nano-scale Interface of Dissimilar Materials. We aim at creating for a sophisticated design and processing of new materials with excellent performance in nano- and atomic-scale. The project provides a new breakthrough in materials science, and opens up the new field of “Nano-Materials Science for Metallic, Inorganic and Organic Glasses”.

This special issue is focused on the topics of a Grant-in-Aid for Science Research in a Project “Joining Technology for New Metallic Glasses and Inorganic Materials”. Among the research topics are metallic glasses, ceramics, amorphous materials, joining welding technology, phase transformations, permeability of hydrogen, quantum dots, biomaterials, propagation of shear deformation bands in metallic glasses, grain boundary interfaces, etc.

We want to thank the local organizers for their enormous efforts and assistance during the Conference.

April 15, 2009

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