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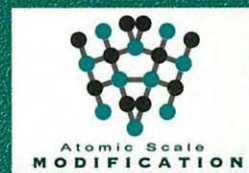
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Preface

The 3rd International Symposium on Advanced Microscopy and Theoretical Calculations (AMTC3) will be held from May 9 to 11, 2012, at the Nagarakawa Convention Center in Gifu City. It is the third in a biannual series which commenced with AMTC1 in 2006, followed by AMTC2 in 2008. This symposium also is a beneficiary of Expo 2005 Aichi, Japan, and is intended to build upon the unqualified success of the previous two meetings. The symposium series is organized by the Nanostructures Research Laboratory of the Japan Fine Ceramics Center to provide a timely forum for the discussion of state-of-the-art techniques and research involving advanced microscopy and theoretical calculations.

The properties of materials depend not only on their chemical components, but also on their nano- and microstructures. Lattice imperfections such as interfaces, surfaces, dislocations, intrinsic point defects and impurities or dopants, and the complex interplay between them, strongly influence the macroscopic properties of a material. Recent developments in electron microscopy and computational materials science now make it possible to analyze structure-property relationships quantitatively with unprecedented detail. This knowledge enables the rational design of new materials that are superior not only in terms of performance but also with regard to environmental concerns and the goal of sustainable development. AMTC3 aims to provide a productive opportunity for participants from universities, industry and research institutes, including students, to learn about cutting-edge R&D, and to take part in an exciting exchange of ideas and information. By bringing together scientists, technologists and engineers from around the globe it is hoped that the symposium will lead to future innovations in this field.

The symposium comprises 23 invited talks and about 100 poster presentations. These presentations illustrate the diversity and vibrancy of modern materials science and nanotechnology fields, and have been organized under the following headings: “*Interfaces and Grain Boundaries*”, “*Environmental and In Situ TEM*”, “*Modeling and Simulations*”, “*Advanced Microscopy*”, and “*Frontiers of Materials Science*”. The seeds of many future scientific and technological breakthroughs are no doubt to be found in these areas, breakthroughs it is hoped will be of benefit both to society and the natural environment, ensuring a high quality of life for future generations.

This symposium is also supported by the Grant-in-Aid for Scientific Research on Priority Areas “Nano Materials Science for Atomic-Scale Modification” from the Ministry of Education, Culture, Sports and Technology (MEXT), “Strategic Young Researcher Overseas Visits Program for Accelerating Brain Circulation” from Japan Society for the Promotion of Science (JSPS), Aichi Prefecture, Nagoya City, Gifu Prefecture and Gifu Convention and Visitors Bureau. Finally we would like to thank also the Chubu Economic Federation for their valued support of this symposium.

May 9, 2012

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