

# AMTC Letters

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International Journal of  
Advanced Microscopy and  
Theoretical Calculations

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Editors

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**Special issue:**

**Proceedings of the 1st International  
Symposium on Advanced Microscopy  
and Theoretical Calculations**



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## Preface

The 1st International Symposium on Advanced Microscopy and Theoretical Calculations (AMTC1) “- For Nanotechnology and Environmental Materials-” is to be held from June 29 to 30, 2008, at the Nagoya Congress Center, Nagoya, Japan. The world’s experts in the fields of advanced microscopy and theoretical calculations will participate in this symposium and discuss the latest developments in these fields.

As is well known, the properties of materials strongly depend on their nano- and micro-structures. Multi-dimensional lattice imperfections such as interfaces, surfaces, dislocations, point defects and impurity/dopants distributions, as well as electro-magnetic domain structures, play key roles in determining properties of the materials. With the aid of recent developments in advanced microscopy and computational techniques, structure-property relationships can be now analyzed quantitatively at both the atomic and electronic levels. Such information enables the rational design of new materials that are not only excellent in terms of performance but that are also superior in terms of environmental protection and sustainable development. Therefore we think that it is timely to hold an international meeting of advanced microscopy and theoretical calculations and to provide a good opportunity to discuss the state-of-the-art developments in these fields. This symposium will be held every second year.

The symposium is held in commemoration of the establishment of the Nanostructures Research Laboratory (NSRL) at the Japan Fine Ceramics Center (JFCC), and also as one of the events to inherit the concept of EXPO 2005 AICHI, JAPAN. JFCC was established in 1985 as a non-profit organization for the purposes of carrying out research and testing on “Fine Ceramics”. At that time the Materials Research Laboratory (MRL) was built as the first laboratory in JFCC. The Nanostructures Research Laboratory (NSRL), the second laboratory to be built in JFCC, was established in April 2007. This laboratory aims to contribute to nanotechnology by means of advanced electron microscopy and first-principles calculations. “To contribute to the creation of new materials by microscopy and calculations”. This is NSRL’s policy.

The symposium comprises 29 invited talks and about 110 poster presentations. These presentations cover a wide area of materials science and nanotechnology: Interface and Grain Boundaries, Advanced Microscopy and Electron Holography, Advanced Spectroscopy, Modeling and Simulations, and Materials Science. Coverage of topical subjects is confidently expected to lead to future breakthroughs in materials science and engineering, which will ultimately be of benefit to environmental protection and to sustainable development throughout the world.

This symposium is also held with the collaboration of 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). Finally we would like to thank Chubu Economic Federation for their support of this symposium.

June 29, 2008

Tsukasa Hirayama  
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