

## *Preface*

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The Second International Symposium on the New Frontiers of Thermal Studies of Materials was held at the 80th Anniversary Memorial Center (Sogo-Kenkyu-Kan) in Suzukakedai (Nagatsuta/Yokohama) Campus of Tokyo Institute of Technology, Japan on 25–27 November, 2001. The First Symposium was held at the same place on 26–27 October, 1998, which had been firstly planned by some active members of the Japan Society of Calorimetry and Thermal Analysis. Later the proposal by Professor Tooru Atake at Tokyo Institute of Technology was successfully accepted by the Ministry of Education, Science, Sports and Culture, Japan. Thus the First Symposium was organized by the Materials and Structures Laboratory, Tokyo Institute of Technology under the auspices of the Japan Society of Calorimetry and Thermal Analysis and the Society of Promotion for Calorimetry and Thermal Analysis, Japan. The proposal was successfully accepted again by the Ministry of Education, Culture, Sports, Science and Technology, Japan, and the Second Symposium was organized under the same conditions as those of the First Symposium. The Symposium was chaired by Professor Tooru Atake, and the members of the organizing committee were Professors Mitsuru Itoh, Tetsuya Hasegawa, Hitoshi Kawaji, Masaharu Oguni, Toshimasa Hashimoto, and Masataka Wakihara at Tokyo Institute of Technology.

Thermodynamic studies have long been playing a very much important role in various fields of science and technology. The Symposium considered the new frontiers and burgeoning fields of thermal studies of materials, and invited active researchers without any further restrictions. 166 delegates (including 24 from overseas) attended the Symposium and 87 papers were presented orally and/or by posters. A variety of new functional materials, such as ferroelectrics, solid state ionics, glasses, bio-substances and other inorganic and organic substances were discussed from the view points of thermal studies. The relationship between the structure and physical properties was covered with strong emphasis on the phase transition and glass transition mechanisms. New techniques such as nano-calorimetry were also discussed.

The opening address was given by the chair, Professor Tooru Atake, and the keynote address was started by the Director of the Materials and Structures Laboratory, Professor Eiichi Yasuda, followed by Professor Ichiro Hatta (Chairman of the Japan Society of Calorimetry and Thermal Analysis), Professor Hiroo Inokuchi (Professor Emeritus, The University of Tokyo, Director of SURP, the National Space Development Agency of Japan), and Professor Edgar F. Westrum, Jr. (University of Michigan, USA). The 18 plenary lectures were as follows:

1. Ichiro Hatta (Fukui Univ. Technol., Japan) 'Thermal Characteristics in a Nanometer Scale'
2. Osamu Nakabeppu (Tokyo Inst. Technol., Japan) 'Microscale Temperature Measurement by Scanning Thermal Microscopy'
3. Yoon Hee Jeong (Pohang Univ. Sci. Technol., Korea) 'The Role of Dynamic Calorimetry in the Development of New Materials: The Case of a Magnetocaloric Material'
4. Junko Morikawa (Tokyo Inst. Technol., Japan) 'Principle and Application of Temperature

Wave Analysis'. 5. C. Austen Angell (Arizona State Univ., USA) 'Calorimetry of Rapidly Quenched Glasses. A Window onto the Energy Landscape of Liquids'. 6. Kia L. Ngai (Naval Res. Lab., USA) Development of Cooperativity in the Molecular Dynamics of Glass-formers: Synergy of Thermodynamics and Intermolecular Coupling. 7. Kazuo Kitahara (Inter. Christian Univ., Japan) 'A One-dimensional Model for Thermal Conductivity'. 8. Hal Tasaki (Gakushuin Univ., Japan) 'Steady State Thermodynamics – Proposal of a New Thermodynamic Framework for Steady Heat Conduction'. 9. Yoshikata Koga (Univ. British Columbia, Canada) 'Mixing Schemes in Ternary Aqueous Solutions: A Thermodynamic Approach'. 10. Shun-ichi Kidokoro (Nagaoka Univ. Technol., Japan) 'Three-dimensional Structure and Thermal Stability of Enzyme-(Stereo-isomeric Inhibitor) Complex'. 11. Peter Westh (Roskilde Univ., Denmark) 'A Novel Calorimetric Method for the Characterization of Water Adsorption on 'Soft' Biopolymer Surfaces'. 12. Alexandra Navrotsky (Univ. California Davis, USA) 'Oxide Melt Solution Calorimetry of Rare Earth Containing Ternary Oxides: Techniques, Problems, Crosschecks, Successes'. 13. Harumi Yokokawa (Natl. Inst. Adv. Ind. Sci. Technol., Japan) 'The Role of Materials Thermodynamics in Developments of High Temperature Electrochemical Devices'. 14. Juliana Boerio-Goates (Brigham Young Univ., USA) 'Adiabatic Heat Capacity Measurements – A Useful Tool to Show Low Temperature Phenomena in Materials'. 15. Jiri Malek (Acad. Sci. Czech. Repub. Univ. Pardubice, Czech) 'Calorimetric Study of Nanocrystallization in Amorphous Oxides'. 16. Ramon Burriel (Univ. Zaragoza, Spain) 'Calorimetric Study of Magnetic Ordering in Molecular Magnetic Materials'. 17. Pascal Richet (Inst. Phys. Globe, Paris, France) 'Enthalpy, Volume and Structural Relaxation in Glass-forming Silicate Melts'. 18. Svein Stolen (Univ. Oslo, Norway) 'Pressure and Temperature Induced Connectivity Changes in the Glass-forming Tetrahedral Network Compound  $\text{GeSe}_2$ '. 87 papers in total were also presented at the poster sessions, which were followed by the plenary discussion co-chaired by Professors Juliana Boerio-Goates and Svein Stolen. 52 selected papers were invited to contribute to the Proceedings. After reviewing by two independent referees, 51 papers were accepted.

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**Prof. Tooru Atake**  
Guest Editor