

## Preface

Thermodynamics have long played a very important role in various aspects of science and technology. In 1997, to open a new horizon in material research field, the International Symposium on the New Frontiers of Thermal Studies of Materials was planned by a group of active members of the Japan Society of Calorimetry and Thermal Analysis (JSCTA) with the vision and leadership of Professor Tooru Atake [Tokyo Institute of Technology (Tokyo Tech.)]. The first Symposium was held at Yokohama Campus of the Tokyo Tech. on 26–27 October 1998, which was supported by the Ministry of Education, Culture, Sports, Science and Technology, Japan, under the auspices of the JSCTA and the Society of Promotion for Calorimetry and Thermal Analysis, Japan (SPCTAJ). The second symposium was held at the same place on 25–27 November 2001, and the third was held at University of Tsukuba on 28–30 November 2004.

Inheriting the success achieved in the previous symposia, the Fourth International Symposium on the New Frontiers of Thermal Studies of Materials was held at Yokohama Media and Communications Center on from 30 November to 2 December 2008 under the auspices of JSCTA and SPCTAJ. The symposium was also supported by 29 academic societies in Japan. As in the former three symposia, Prof. Tooru Atake chairs the meeting. The members of the organizing committee were Prof. Hitoshi Kawaji (Executive Secretary, Tokyo Tech.), Dr. Harumi Yokokawa (National Institute of Advanced Industrial Science and Technology), Prof. Toshimasa Hashimoto (Tokyo Tech.), Prof. Akira Inaba (Osaka Univ.), Prof. Masaharu Oguni (Tokyo Tech.) and Prof. Kazuya Saito (Univ. Tsukuba).

The Symposium invited active researchers ranging from theoreticians to experimentalists, in the wide field ranging from condensed matter physics to biochemistry. In total,

110 delegates (12 countries) attended the symposium and 87 papers were presented orally or by posters. This special chapter of the *Journal of Thermal Analysis and Calorimetry* contains 26 selected papers, which were reviewed by two independent referees.

The Symposium was opened by the symposium chair, Prof. Tooru Atake. The following keynote addresses were given by distinguished guests, Prof. Akira Inaba (President of JSCTA), Prof. Shigeru Yamauchi (SPCTAJ) and Prof. Hiroo Inokuchi (Professor Emeritus, The University of Tokyo). Seventeen invited lectures were as follows: Kia L. Ngai (Naval Research Laboratory, USA) ‘Relaxation of water in aqueous mixtures, in nano-confinement, and in hydrated proteins’, Michael Frenkel (NIST, USA) ‘Global information system in thermodynamics and its impact’, Makoto Aratono (Kyushu Univ., Japan) ‘Thermodynamics and structure studies of Gibbs films at soft interfaces’, Kikujiro Ishii (Gakushuin Univ., Japan) ‘Liquid–liquid transformation from low- to high-density supercooled states of familiar organic compounds’, Christoph Schick (Univ. Rostock, Germany) ‘Non adiabatic thin-film (chip) nanocalorimetry for fast scanning ( $10^6$  K/s) and ac-calorimetry’, Masaru Aniya (Kumamoto Univ., Japan) ‘A Model for the anomalous electronic properties in liquid silver chalcogenides: implications from a viscoelastic theory’, Pascal Richet (Inst. Phys. Globe Paris, France) ‘Cation speciation and redox state in silicate glasses: insight from low-temperature calorimetry’, Makoto Kano (Tokyo Univ. Sci., Yamaguchi, Japan) ‘Living system are neither isolated systems nor equilibrium systems’, Yoshikata Kkoga (Univ. of British Columbia, Canada) ‘On the so-called Koga line in aqueous solutions of mono-ols’, Hirohisa Yoshida (Tokyo Metro. Univ., Japan) ‘A role of liquid crystal on orientation control of nano-cylinders in amphiphilic liquid crystal block copolymer’, Riccardo

Casalini (Naval Research Laboratory/George Mason Univ., USA) ‘Supercooled dynamics of glass-forming liquids and polymers under hydrostatic pressure’, Sergey LUSHNIKOV (Ioffe Phys. Tech. Inst., Russia) ‘Protein is a fractal evidences from neutron scattering study of lysozyme’, Svein Stølen (Univ. Oslo, Norway) ‘Exploring the rough energy landscapes of fast ion conductors’, Takashi Sakuma (Ibaraki Univ., Japan) ‘Correlation effects among thermal vibrations of atoms’, Mary Anne White (Dalhousie Univ., Canada) ‘Negative thermal expansion materials and their related thermal properties’, Yukikuni Akishige (Shimane Univ., Japan) ‘Thermal properties of ferroelectric BaTi<sub>2</sub>O<sub>5</sub>: A comparison with ferroelectric BaTiO<sub>3</sub>’, Yasuhiro

Nakazawa (Osaka Univ., Japan) ‘Thermodynamic evidence of a spin liquid ground state of organic salts with two-dimensional triangular structure’.

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**Prof. Tooru Atake**  
**Prof. Hitoshi Kawaji**