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FOREWORD AND ACKNOWLEDGMENTS

The International Conference on Shape Memory and Superelastic Technologies 2007, SMST-2007, was held December 2–5, 2007 in Tsukuba, Japan. This is the first SMST sponsored by the International Organization on SMST, an affiliate society of ASM International, and organized in a country other than the USA. The SMST-2007, organized by the members of the Association of Shape Memory Alloys (ASMA), built upon the foundation created by previous conferences, at Asilomar in 1994, 1997, 2000, 2003, and 2006, in addition to three previous SMST self-sponsored conferences organized in Belgium in 1999, China in 2001, and Germany in 2004.

This four-day technical and scientific conference was held at the International Congress Center in Tsukuba. Known as “Science City,” it was established as the nation’s largest research and education center. Tsukuba is home to the country’s national testing and research facilities with 19,000 researchers within the city, and over 120 private businesses focusing on research and development. Tsukuba is located 40 km from Narita International Airport and 50 km from Akihabara, Tokyo.

The conference began Sunday evening, December 2 with a Welcome and Opening Remarks at a Welcome Reception. It was followed by three days of sessions, Monday through Wednesday, December 3–5, and a Poster Session on Monday evening, an Exhibitor Reception on Tuesday evening and a Banquet on Wednesday evening. More than 210 people from 23 different countries participated in SMST-2007, presenting 180 talks including 129 oral and 51 poster presentations. The conference focused on the practical engineering and medical aspects of shape memory and superelastic alloys, e.g., alloy development and characterization, engineering and medical applications, mechanical properties, corrosion/biocompatibility/surface processing, modeling/design, and Japanese applications. Since Japan has extensively developed new shape memory alloys as well as many of the engineering and medical applications on the market, attendants found the latest results at the conference. Bringing additional results to the conference from all over the world, attendants had the opportunity to exchange information and ideas leading to their future development on new alloys and applications.
The SMST-2007 would not have been successful without the assistance and cooperation of a great number of people. I would like to acknowledge the support and advice of the Chairs, Organizing Committee, Technical Committee, Advisory Committee, Cooperating Societies, ASM International staffs and Exhibitors. All members are listed on the next page. I, also, would like to greatly thank many attendants who have presented their recent research results and exchanged new information at the conference site in addition to submitting their manuscripts to this volume.

Finally, I would like to thank our generous sponsors who helped to make the conference a great success. Sponsors for SMST-2007 were as follow:

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These proceedings are divided into four sections according to the types of shape memory alloys: TiNi-based alloys; Ni-free Ti-based alloys; magnetic alloys; and other alloys. The first section is entitled *TiNi-Based Shape Memory/Superelastic Alloys* including 64 papers and divided into six subsections according to the types of specific topics: a) Processing and Microstructure; b) Mechanical Properties—Deformation, Fatigue, and Fracture; c) Corrosion, Biocompatibility, and Surface Processing; d) Thin Films—Processing, and Applications; e) Engineering Applications—Design and Products; and f) Medical Applications—Device, Manufacturing, and Testing. These subsections include 18, 15, 6, 6, 13, and 6 papers, respectively.

The second section, with 9 papers, is dedicated to the new field of *Ni-Free Ti-Based Shape Memory Alloys*. These alloys are considered as important candidate materials for shape memory/superelastic biomedical applications. This subject is first addressed by an SMST proceedings as its own chapter, reflecting increasing interest in the materials. The materials have been developed and investigated extensively with strong intention of developing new biomedical Ti-based shape-memory/superelastic alloys since 2001, especially in Japan, and their researches are spreading all over the world.

*Magnetic Shape Memory Alloys* are included in the third section with 5 papers. The number of researches on these materials has been increasing in the world, because their shape memory effect is driven by magnetic field instead of temperature variation suggesting fast actuation. Since the present researches of these materials are mostly on a basic research stage, a large number of presentations at SMST will be expected in the future when these materials will be close to the application development stage.

The fourth section, with 10 papers, is arranged for *Other Shape Memory/Superelastic Alloys* which include Cu-based, Fe-based, and other alloys. Among these alloys, Cu-based and Fe-based alloys have been considered as alternative materials for applications. It is noteworthy that Fe-based alloys were recently used for application products for the first time by a Japanese company; the products were only shown at the exhibition session.
This volume contains a total number of 88 papers. They have been carefully reviewed and edited by the editor, many independent reviewers and authors themselves. The elaborate works of the reviewers and authors are greatly appreciated. Lastly, great appreciation should be dedicated to Associate Professor Hee Young Kim, who has played important rolls in arranging Conference Program, reviewing manuscripts and editing proceedings.

Shuichi Miyazaki
SMST-2007 Editor