

“INTERNATIONAL SYMPOSIUM ON SMART MATERIALS AND STRUCTURAL SYSTEMS”

- Mechanical Engineering Congress, 2001 Japan (MECJ-01) -

August 28-29, 2001

Fukui University of Technology (Room K-23), Fukui, Japan

6-1, Gakuen 3-chome, Fukui-shi, Fukui 910-8505

Symposium Chair

Junji Tani (Tohoku University)

Organizer & Secretary

Hiroshi Asanuma (Chiba University)

Organizers

Kazuro Kageyama (The University of Tokyo)

Nobuo Takeda (The University of Tokyo)

Toshiyuki Takagi (Tohoku University)

Hiroshi Okubo (Osaka Prefecture University)

Yasubumi Furuya (Hirosaki University)

SCOPE

The concept of materials having intelligent functions can be applied to various structural systems which are made based on metals, ceramics and complex materials. Complex materials are especially suited for such uses as intensified fiber orientation and multi-functional material designing. Intelligent complex materials or smart composites which are structured upon complex materials are expected to be further developed, and they have great potential to realize high reliability and to achieve lower cost.

This symposium covers researches in the exciting area of smart materials and structural systems, including health monitoring technology, smart manufacturing technology, active adaptive structure technology and actuator materials and components. The program includes oral presentations of keynote and invited lectures. At this symposium, we have participants from USA, Europe and Asia. There are a lot of hot discussions on smart materials and structural systems.

It is our hope that all participants enjoy this symposium and have fruitful exchange of ideas.

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Junji Tani (Tohoku University)

Organizer & Secretary

Hiroshi Asanuma (Chiba University)

PROGRAM

28 August

9:50-10:00 OPENING ADDRESS

Junji Tani (Symposium Chair, Tohoku University)

INTRODUCTION I Chair: Akira Todoroki (Tokyo Institute of Technology)

10:00-10:50 Keynote “Multi-dimensional Characteristics of Smart Materials and Structronic Systems” Horn-Sen Tzou and Ichiro Hagiwara* (University of Kentucky, USA, *Tokyo Institute of Technology)

INTRODUCTION II Chairs: Horn-Sen Tzou (University of Kentucky, USA) and Satoshi Kishimoto (National Institute for Materials Science)

10:50-11:20 Invited “Harmonic Design for Multi-functional and Smart Materials” Yasubumi Furuya (Hirosaki University)

11:20-11:50 Invited “Current Topics of Smart & Intelligent Materials & Systems” Yoshitake Nishi (Tokai University)

11:50-13:10 Lunch

SMART/INTELLIGENT MATERIALS I Chair: Norio Shinya (National Institute for Materials Science)

13:10-14:00 Keynote “Self-repairing and Self-forming Smart Materials Based on Biomimetic Rules” Carolyn Dry (University of Illinois at Urbana-Champaign, USA)

SMART/INTELLIGENT MATERIALS II Chairs: Carolyn Dry (University of Illinois at Urbana-Champaign, USA) and Yoshitake Nishi (Tokai University)

14:00-14:30 Invited “Self-healing of Creep Damage in Austenitic Stainless Steel” Norio Shinya, Junro Kyono and Satoshi Kishimoto (National Institute for Materials Science)

14:30-15:00 Invited “Development of High-performance Piezoelectric Actuators” Jinhao Qiu, Junji Tani and Hirofumi Takahashi* (Tohoku University, *Fuji Ceramics Corporation)

(15:00-15:20 Coffee Break)

15:20-15:50 Invited “Recent Research Activities on Ferromagnetic Shape Memory Alloys” Toshiyuki Takagi, Vladimir Khovailo, Minoru Matsumoto and Alexander Vasil'ev* (Tohoku University, *Moscow State University, Russia)

SMART COMPOSITES I Chair: Hiroyuki Toda (Toyohashi University of Technology)

15:50-16:20 Keynote “Characteristic of TiNi Shape Memory Alloy Fiber Reinforced 6061 Aluminum Matrix Composite by Using FEA and Experiment” Young Chul Park, Jun Hee Lee, Dong Sung Park and Gyu Chang Lee* (Dong-A University, *Research Institute of Industrial Science of Technology, Korea)

SMART COMPOSITES II Chairs: Young Chul Park (Dong-A University, Korea) and Kiyoshi Mizuuchi (Osaka Municipal Technical Research Institute)

16:20-16:50 Invited “Processing and High Temperature Properties of Shape Memory Alloy (SMA) Reinforced Metal Matrix Composites” Kiyoshi Mizuuchi, Kanryu Inoue*, Masami Sugioka, Masao Itami, Yoshihira Okanda (Osaka Municipal Technical Research Institute, *University of Washington, USA)

16:50-17:20 Invited “Shape Memory Alloy Particles Dispersed Titanium Composite” Hiroyuki Toda and Toshiro Kobayashi (Toyohashi University of Technology)

17:20-17:50 Invited “Development of Active and Sensitive Structural Materials” Hiroshi Asanuma (Chiba University)

18:30-20:30 RECEPTION

29 August

8:50-10:55 Regular Sessions on “Concurrent Material Design for Multi-functional Materials” (in Japanese)

ACTIVITIES IN EUROPE Chair: Toshiyuki Takagi (Tohoku University)

11:00-11:50 Keynote “Overall Simulation and Design of Intelligent Structures (including an overview about R&D activities in Europe)” Ulrich Gabbert (Otto-Von-Guericke-Universitat Magdeburg, Germany)

11:50-13:00 Lunch

VIBRATION CONTROL I Chair: Ichiro Hagiwara (Tokyo Institute of Technology)

13:00-13:50 Keynote “Topology Optimization for Optimal Design of Microdevices and Microsystems” Hejun Du, Gih-Keong Lau, Ling Pan, Jinhao Qiu* and Junji Tani* (Nanyang Technological University, Singapore, *Tohoku University)

VIBRATION CONTROL II Chair: Takehito Fukuda (Osaka City University)

13:50-14:40 Keynote “Vibration and Deflection Control of Smart Structures” In Lee (Korea Advanced Institute of Science and Technology, Korea)

VIBRATION CONTROL III Chair: Ulrich Gabbert (Otto-Von-Guericke-Universität Magdeburg, Germany)

14:40-15:10 Invited “Development of Semi-Active Piezo-Actuation Control Equipment” Ichiro Hagiwara, Du Wang and Zhong-Yang Guo* (Tokyo Institute of Technology, *Semence)

(15:10-15:30 Coffee Break)

MONITORING Chairs: In Lee (Korea Advanced Institute of Science and Technology, Korea) and Hejun Du (Nanyang Technological University, Singapore)

15:30-16:00 Invited “In Situ Cure Monitoring in Composites Molding Process” Takehito Fukuda, Tatsuro Kosaka and Katsuhiko Osaka (Osaka City University)

16:00-16:30 Invited “Structural Health Monitoring: Sensors, Diagnostic Method and System” Akira Todoroki (Tokyo Institute of Technology)

SMART SYSTEMS Chair: Yasubumi Furuya (Hirosaki University)

16:30-17:20 Keynote “Microsensors, MEMS and NEMS for Complex Adaptive Smart Structures and Systems” Vijay K. Varadan (The Pennsylvania State University, USA)

17:20-17:50 DISCUSSIONS

Chairs: Vijay K. Varadan (The Pennsylvania State University, USA) and Koichi Egawa (Niigata Institute of Technology)

17:50-18:00 CLOSING REMARKS

Kazuro Kageyama (The University of Tokyo)

18:00-20:00 BANQUET

30 August

8:50-17:25 Regular Sessions on “Smart Materials and Structural Systems” (in Japanese)

For more information, please contact:

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