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CONFERENCE OUTLINE

SYMPOSIA

SYMPOSIUM **A**

Smart Materials and Micro/Nanosystems

SYMPOSIUM **B**

Smart Optics

SYMPOSIUM **C**

Embodying Intelligence in Structures and Integrated Systems

SYMPOSIUM **D**

Biomedical Applications of Smart Materials, Nanotechnology and Micro/Nano Engineering

SYMPOSIUM **E**

Mining Smartness from Nature

FOCUSED & SPECIAL SESSIONS

SPECIAL SESSION **A-9**

Recent Development in Electrical Writable Organic Memory Devices

FOCUSED SESSION **A-10**

State-of-the-art Research and Application of SMAs Technologies

FOCUSED SESSION **A-11**

Smart Textiles

FOCUSED SESSION **A-12**

Artificial Muscle Actuators Using Electroactive Polymers

SPECIAL SESSION **E-6**

Biomimetic Flow Control in Aquatic Systems and its Application to Bioinspired Autonomous Underwater Vehicles

Meeting Rooms by Session

OPENING SESSION	AUDITORIUM
Session A-1	AUDITORIUM / ORLANDO A
Session A-2	ORLANDO B
Session A-3	ORLANDO B
Session A-5	ORLANDO A
Session A-6	ORLANDO A
Session A-7	ORLANDO A
Session A-8	ORLANDO B
Session A-9	ORLANDO B
Session A-10	RINALDO B
Session A-11	BELLINI
Session A-12	ORLANDO B / ETNA
Session B-1	ORLANDO C / BELLINI
Session B-2	ORLANDO C
Session B-3	ORLANDO C
Session C "Key Notes"	ORLANDO A
Session C-1	MANFREDI A
Session C-2	MANFREDI B
Session C-3	MANFREDI A / MANFREDI B
Session C-4	MANFREDI B
Session C-5	MANFREDI A / MANFREDI B
Session D-1	RINALDO C
Session D-2	RINALDO C
Session D-3	RINALDO C
Session D-4	RINALDO C
Session D-5	RINALDO C
Session D-6	RINALDO C
Session D-7	RINALDO C
Session E-1	RINALDO A
Session E-2	RINALDO A
Session E-3	ETNA / RINALDO A
Session E-4	RINALDO A
Session E-6	ETNA / SCILLA

Events by Day

Sunday June 8

- 11.00-13.00 REGISTRATION
15.00-19.30 Congress Centre "La Perla Ionica"

8.30-19.00 *POSTER MOUNTING*

Monday June 9

MORNING 9.30-11.15

Opening Session Auditorium

Welcome Address

Plenary Lectures (PL-01 - PL-02)

Coffee Break: 11.15 - 11.45

Session A-1 (A-1:IL02-IL03)	AUDITORIUM
Session A-10 (A-10.1:IL01-IL02)	RINALDO B
Session A-11 (A-11.1:IL01-IL06)	BELLINI
Session B-1 (B-1.2:IL01-L02)	ORLANDO C
Session C (C:KL01-KL03)	ORLANDO A
Session D-1 (D-1:IL02-IL04)	RINALDO C
Session E-1 (E-1.1:IL01-IL02)	RINALDO A

"Buffet Lunch": 13.00 - 14.45

Monday June 9

AFTERNOON

Session A-1	(A-1:IL04-L10)	ORLANDO A
Session A-2	(A-2:IL01-L05)	ORLANDO B
Session A-9	(A-9:IL01-L10)	ORLANDO B
Session A-10	(A-10.1:IL03-L07)	RINALDO B
Session A-11	(A-11.1:IL02-IL05)	BELLINI
	(A-11.1:L07-L08)	BELLINI
	(A-11.2:IL09)	BELLINI
Session B-1	(B-1.1:IL01-IL03)	ORLANDO C
	(B-1.3:IL01-IL02)	ORLANDO C
Session B-2	(B-2.2:L07)	ORLANDO C
Session C-1	(C-1:IL01-IL03)	MANFREDI A
	(C-1:IL04-IL05)	MANFREDI A
Session C-3	(C-3:L01-L03)	MANFREDI B
	(C-3:L05-L08)	MANFREDI B
Session D-1	(D-1:IL03-L06)	RINALDO C
	(D-1:IL07-L09)	RINALDO C
Session E-1	(E-1.1:IL04-L06)	RINALDO A
	(E-1.2:IL01-L03)	RINALDO A
Session E-3	(E-3.1:L01-IL04)	ETNA
	(E-3.1:L05-L07)	ETNA

19.00-20.00

"Get-Together" (Welcome Drinks)

Tuesday June 10

MORNING

Session A-1	(A-1:IL11-L15)	ORLANDO A
	(A-1:IL16-L19)	ORLANDO A
Session A-2	(A-2:IL06-L10)	ORLANDO B
Session A-10	(A-10.3:IL01-L04)	RINALDO B
	(A-10.4:IL01-L03)	RINALDO B
Session A-12	(A-12.1:IL03-IL07)	ORLANDO B
Session B-2	(B-2.3:IL01-IL04)	ORLANDO C
Session B-1	(B-1.2:IL03-IL05)	ORLANDO C
Session C-1	(C-1:L06-L09)	MANFREDI A
	(C-1:L10-L13)	MANFREDI A
Session C-2	(C-2:IL01-IL02)	MANFREDI B
	(C-2:IL05-IL06)	MANFREDI B
Session D-1	(D-1:IL10-L14)	RINALDO C
Session D-2	(D-2:IL01-L03)	RINALDO C
Session E-1	(E-1.1:IL07-IL10)	RINALDO A
	(E-1.3:IL01-L03)	RINALDO A

"Buffet Lunch": 13.00 - 14.45

Tuesday June 10

AFTERNOON

Session A-5	(A-5:IL01-L04)	ORLANDO A
Session A-6	(A-6:L01-L05)	ORLANDO A
Session A-9	(A-9:IL04-L13)	ORLANDO B
Session A-3	(A-3:IL01-L03)	ORLANDO B
Session A-10	(A-10.2:IL01-L05)	RINALDO B
	(A-10.3:IL07-L10)	RINALDO B
Session B-1	(B-1.1:L04-L09)	BELLINI
	(B-1.3:IL03-L07)	ORLANDO C
Session B-2	(B-2.1:L06-L09)	ORLANDO C
Session C-1	(C-1:IL16-IL17)	MANFREDI A
	(C-1:L19-L21)	MANFREDI A
Session C-2	(C-2:L07-L12)	MANFREDI B
Session C-4	(C-4:IL01-IL13)	MANFREDI B
Session D-2	(D-2:IL05-L09)	RINALDO C
	(D-2:IL10-IL12)	RINALDO C
Session E-2	(E-2.1:IL01-L05)	RINALDO A
Session E-1	(E-1.3:IL05-L07)	RINALDO A
Session E-6	(E-6:IL02-IL04)	ETNA
	(E-6:IL05-IL06)	ETNA

POSTER DISCUSSION: 18.30 - 19.45

Red Label Posters

Posters whose last number is an even number, i.e. A-5:P12

Wednesday June 11

MORNING

Session A-5	(A-5:IL06-L10)	ORLANDO A
	(A-5:IL11-L13B)	ORLANDO A
Session A-8	(A-8:IL01-L04)	ORLANDO B
	(A-8:IL05-L07)	ORLANDO B
Session A-10	(A-10.2:IL06-L10)	RINALDO B
	(A-10.2:IL11-IL13)	RINALDO B
Session A-11	(A-11.3:IL01-L05B)	BELLINI
	(A-11.3:IL06-L08)	BELLINI
Session A-12	(A-12.2:IL01-L05)	ETNA
	(A-12.1:IL14-L16)	ETNA
Session B-1	(B-1.4:IL01-IL04)	ORLANDO C
	(B-1.5:IL01-IL02)	ORLANDO C
Session C-3	(C-3:L09-L14)	MANFREDI A
	(C-3:IL15-IL16)	MANFREDI A
Session C-4	(C-4:IL03-IL05)	MANFREDI B
	(C-4:IL06-L11)	MANFREDI B
Session D-3	(D-3:IL01-IL03)	RINALDO C
	(D-3:IL04-IL07)	RINALDO C
Session E-2	(E-2.1:IL06-L10)	RINALDO A
Session E-3	(E-3.2:IL01-L05)	RINALDO A

"Buffet Lunch": 13.00 - 14.45

*15.00 - 20.00
Tour to Taormina
Bus Departure from Congress Center at 15.00*

Thursday June 12

MORNING

Session A-5	(A-5:L14-IL18)	ORLANDO A
Session A-8	(A-8:IL09-IL11)	ORLANDO B
	(A-8:IL12-L16)	ORLANDO B
Session A-10	(A-10.5:IL01-L06)	RINALDO B
	(A-10.4:IL04-L06)	RINALDO B
Session A-11	(A-11.3:IL09-L13)	BELLINI
	(A-11.1:IL03)	BELLINI
	(A-11.2:L02-L03)	BELLINI
Session A-12	(A-12.2:IL06-L10)	ETNA
	(A-12.2:IL11-L13)	ETNA
Session B-1	(B-1.5:IL04-L06)	ORLANDO C
Session B-2	(B-2.1:IL01-IL03)	ORLANDO C
Session C-3	(C-3:L18-L21)	MANFREDI A
	(C-3:IL23-IL24)	MANFREDI A
Session C-5	(C-5:IL01-IL03)	MANFREDI B
	(C-5:L05-L12)	MANFREDI B
Session D-5	(D-5:IL02-L04)	RINALDO C
Session D-4	(D-4:IL02-L06)	RINALDO C
Session E-4	(E-4.2:IL03-IL05)	RINALDO A
	(E-4.3:IL01-IL03)	RINALDO A
Session E-6	(E-6:IL07-IL09)	SCILLA
	(E-6:IL10-IL11)	SCILLA

Thursday June 12

AFTERNOON

Session A-7	(A-7:IL01-L04)	ORLANDO A
Session A-8	(A-8:IL17-L22)	ORLANDO B
Session A-10	(A-10.5:IL07-L10)	RINALDO B
Session A-11	(A-11.1:IL09-IL10-L12)	BELLINI
	(A-11.1:IL11-IL13)	BELLINI
Session A-12	(A-12.1:IL08-L10)	ETNA
	(A-12.1:IL11-L13)	ETNA
Session B-2	(B-2.2:IL02-IL04)	ORLANDO C
	(B-2.1:IL04-IL05)	ORLANDO C
Session C-3	(C-3:L25-IL29)	MANFREDI A
	(C-3:IL30-IL31)	MANFREDI A
Session C-4	(C-4:L15-L19)	MANFREDI B
Session D-6	(D-6:IL01-IL04)	RINALDO C
Session D-7	(D-7:L02-L05)	RINALDO C
Session E-4	(E-4.1:IL01-IL02)	RINALDO A
Session E-2	(E-2.2:IL01-L03)	RINALDO A
Session E-6	(E-6:IL13-IL15)	SCILLA
	(E-6:IL16-IL17)	SCILLA

POSTER DISCUSSION: 18.30 - 19.45

Green Label Posters

Posters whose last number is an odd number, i.e. A-2:P09

Friday June 13

MORNING

Session A-7	(A-7:IL06-L13)	ORLANDO A
Session A-8	(A-8:IL24-L26)	ORLANDO B
	(A-8:L28-L30)	ORLANDO B
Session A-10	(A-10.1:IL08-L12)	RINALDO B
	(A-10.1:IL13-L16)	RINALDO B
Session A-11	(A-11.2:IL05-L07B)	BELLINI
	(A-11.2:IL08-L11)	BELLINI
Session A-12	(A-12.3:IL01-L04)	ETNA
	(A-12.3:IL05-IL07)	ETNA
Session B-3	(B-3:IL01-L05)	ORLANDO C
	(B-3:IL06-IL08)	ORLANDO C
Session C-4	(C-4:L20-L26)	MANFREDI B
	(C-4:IL27-IL29)	MANFREDI B
Session C-5	(C-5:L09-IL14)	MANFREDI A
	(C-5:IL15-IL16)	MANFREDI A
Session D-5	(D-5:IL06-L10)	RINALDO C
Session D-7	(D-7:IL06-IL07)	RINALDO C
Session E-4	(E-4.2:IL06-L09)	RINALDO A

"Buffet Lunch": 13.00 - 14.45

*15.00 Transfer by bus to hotels
(congress members are kindly asked to reach
the respective hotels)*

16.30 - 23.30
Escursion to Etna Volcano
&
Conference Dinner

Bus departure at 16.30 from each hotel

SESSIONS FLOWSHEET

June 9-13

3rd International Conference **SMART MATERIALS, STRUCTURES AND SYSTEMS**

Chair

Pietro Vincenzini
World Academy of Ceramics
National Research Council, Italy

SYMPOSIA & FOCUSED / SPECIAL SESSIONS

Programme Chairs

Symposium A

Giuseppe D'Arrigo, CNR-IMM, Catania, Italy

Symposium B

Giancarlo C. Righini, CNR, Rome Italy

Symposium C

Fabio Casciati, Pavia University, Pavia, Italy

Symposium D

Danilo De Rossi, Pisa University, Pisa, Italy

Symposium E

Salvatore Graziani, Catania University, Catania, Italy

Special Session A-9

Shashi Paul, De Montfort University, Leicester, UK

Focused Session A-10

Stefano Besseghini, IENI CNR, Lecco, Italy

Focused Session A-11

Rita Paradiso, Smartex Srl, Prato, Italy

Focused Session A-12

Yoseph Bar-Cohen, Caltech, Pasadena, CA, USA &
Federico Carpi, University of Pisa, Pisa, Italy

Special Session E-6

Paolo Arena, Catania University, Catania, Italy

OPENING SESSION

AUDITORIUM

Chair:

E. RIMINI
IMM-CNR, Catania, Italy

9.30 - 9.45

Welcome

P. VINCENZINI
General Chair CIMTEC Conferences

Plenary Lectures

9.45 - 10.30

PL-01

**Development of a Practical Monitoring System of
Urban Infrastructure toward Mitigation of
Disaster and Accidents**

Y. FUJINO
The University of Tokyo, Tokyo, Japan

10.30 - 11.15

PL-02

**EAP Actuators for Biomimetic Technologies with
Humanlike Robots as one of the Ultimate Challenges**

Y. BAR-COHEN
Jet Propulsion Lab., California Institute of Technology,
Pasadena, CA, USA

11.15 - 11.45

Coffee Break

MONDAY JUNE 9 MORNING

Session A-1 - Ferroelectric, Piezoelectric, Electrostrictive and Magnetostrictive Single Crystal and Polycrystalline Ceramics and Metal Alloys

Room: AUDITORIUM

Chair: N.F. DE ROOIJ, University of Neuchâtel, Switzerland

11.50 *Welcome by Symposium A Programme Chair:*
G. D'ARRIGO, CNR-IMM, Catania, Italy

12.00 *A-1: IL02 Piezoelectric Composites: Properties and Applications*
C. BOWEN, University of Bath, Bath, UK

12.30 *A-1: IL03 Lead-free Piezoelectrics for Transducer Applications*
A. SAFARI, Rutgers University, Piscataway, NJ, USA

Session A-10.1 - Materials

Room: RINALDO B

Chair: XIAOBING REN, National Institute for Materials Science, Ibaraki, Japan

11.50 *Welcome by Focused Session A-10 Coordinator:*
S. BESSEGHINI, IENI CNR, Lecco, Italy

12.00 *A-10.1: IL01 New Ferromagnetic Shape Memory Systems: Research Lines and Unresolved Problems*
E. CESARI, M. CORRO', S. KUSTOV, F. MASDEU, C. PICORNELL, J. PONS, R. SANTAMARTA, C. SEGUI', Universitat de les Illes Balears, Palma de Mallorca, Spain; W. MAZIARZ, J. DUTKIEWICZ, Institute of Metallurgy and Materials Science, Krakow, Poland; Y.I. CHUMLYAKOV, Siberian Physical-Technical Institute, Tomsk, Russia

12.30 *A-10.1: IL02 Recent Developments of Magnetic SMA*
O. SÖDERBERG, I. AALTIO, YANLING GE, XUWEN LIU, S.-P. HANNULA, Helsinki University of Technology, TKK, Finland

Session A-11.1 - Adaptive / Active Textiles

Room: **BELLINI**

Chair: K.R. ATKINSON, CSIRO Textile & Fiber Technology, Geelong, Victoria, Australia

11.50 *Welcome by Focused Session A-11 Coordinator:*
R. PARADISO, Smartex Srl, Prato, Italy

12.00 **A-11.1: IL01 Nanotechnology for Functional Textiles**
H. PLANCK, T. STEGMAIER, M. DAUNER, Institute for Textile and Process Engineering, Denkendorf, Germany

12.30 **A-11.1: IL06 Polymeric Nanofibers Reinforced with Multiwall Carbon Nanotubes for Applications Ranging from Filters to Tissue Scaffolds**
R.E. GORGA, L.I. CLARKE, NC State University, Raleigh, NC, USA

Session B-1 - Smart Optical Materials

B-1.2 Functional Materials and Liquid Crystals

Room: **ORLANDO C**

Chair: SANG H. CHOI, NASA Langley Research Center, USA

11.50 *Welcome by Symposium B Programme Chair:*
G. RIGHINI, CNR Rome, Italy

12.00 **B-1.2: IL01 Advances in Nanostructured Holographic Polymer-Dispersed Liquid Crystals**
L.V. NATARAJAN^{1,2}, V.P. TONDIGLIA^{1,2}, T.J. WHITE^{1,3}, P.F. LLOYD^{1,4}, J. WOFFORD^{1,5}, R.P. SUTHERLAND^{1,2}, T.J. BUNNING¹, ¹Air Force Research Labs, RX, Wright Patterson Air Force Base, OH, USA; ²Science Applications International Corporation (SAIC); ³General Dynamics Information Technology (GDIT); ⁴UES, Inc.; ⁵SOICHE

12.30 **B-1.2: L02 New Class of Highly Conjugated Nanomotors: Catenanes and Rotaxanes as Potential Candidates for Nonlinear Optical Applications**
R. CZAPLICKI, Z. ESSAIDI, F. KAJZAR, B. SAHRAOUI, University of Angers, Angers, France

MONDAY JUNE 9 MORNING

Symposium C - Opening Session

Room: ORLANDO A

Chair: F. CASCIATI, Pavia University, Pavia, Italy

11.45 *Welcome by Symposium C Programme Chair:*
F. CASCIATI, Pavia University, Pavia, Italy

11.50 *C: KL01 Structural Intelligence: Self-monitoring, Actuation and Adaptation*
A. PREUMONT, R. BASTAITS, A. DERAEMAER, B. DE MARNEFFE, M. EL OUNI, G. RODRIGUES, Université Libre de Bruxelles, Brussels, Belgium

12.20 *C: KL02 Controlling Processes for Aerospace Materials - Challenge's and Opportunities*
T.P. RUSSELL, Air Force Office of Scientific Research, Arlington, VA, USA

12.50 *C: KL03 Microvascular Autonomic Composites*
S.R. WHITE, University of Illinois at Urbana-Champaign, Urbana, IL, USA

Session D-1 - Advances in Smart Materials Synthesis and Functionality

Room: RINALDO C

Chair: D. DIAMOND, Dublin City University, Dublin, Ireland

11.50 *Welcome by Symposium D Programme Chair:*
D. DE ROSSI, Pisa University, Pisa, Italy

12.00 *D-1: IL02 Lab on a Chip Devices for Preventive Medical Engineering*
YOSHINOBU BABA, Nagoya University, Nagoya, Japan

12.30 *D-1: IL04 Biomedical Applications of Superhydrophobic Surfaces*
S.E.J. BELL, I.A. LARMOUR, H.J. ABRAHAM, G.C. SAUNDERS, C.P. McCOY, D.S. JONES, S.P. GORMAN, Queen's University, Belfast, UK

MONDAY JUNE 9 MORNING

Session E-1 - Algorithms, Mechanisms and Structures in Nature as Inspiration for Mimicking

E-1.1 Biological Approaches and Solutions

Room: RINALDO A

Chair: S.N. GORB, MPI for Metals Research, Stuttgart, Germany

11.50 *Welcome by Symposium E Programme Chair:*
S. GRAZIANI, Catania University, Catania, Italy

12.00 *E-1.1: IL01 A Biomimetic Approach to Materials Science*
G. JERONIMIDIS, University of Reading, Reading, UK

12.30 *E-1.1: IL02 Spider Silk as an Inspiration for Biomimicking*
M. ELICES¹, J. PÉREZ-RIGUEIRO¹, G.R. PLAZA¹, G.V. GUINEA¹, P.
CORSINI², E. MARSANO², ¹Universidad Politécnica de Madrid,
Madrid, Spain; ²Università di Genova, Genova, Italy

"Buffet Lunch": 13.00 - 14.45

8.30-19.00
POSTER MOUNTING
All Posters

MONDAY JUNE 9 AFTERNOON

Session A-1 - Ferroelectric, Piezoelectric, Electrostrictive and Magnetostrictive Single Crystal and Polycrystalline Ceramics and Metal Alloys

Room: ORLANDO A

Chair: ZHONGYANG CHENG, Auburn University, Auburn, AL, USA

- 15.30 *A-1: IL04* **Phase Transition Behavior of Anti-ferroelectric Ceramics and its Applications**
ZHUO XU, YUJUN FENG, XI YAO, Xi'an Jiaotong University, Xi'an, China
- 16.00 *A-1: L05* **High-performance Lead-free Barium Titanate Piezoelectric Ceramics**
T. KARAKI, K. YAN, M. ADACHI, Toyama Prefectural University, Imizu, Toyama, Japan
- 16.20 *A-1: L10* **Difference in Ferroelectric Aging Between A-site and B-site Acceptor Doped BaTiO₃ Crystals**
LIXUE ZHANG, Xi'an Jiaotong University, Xi'an, China; XIAOBING REN, National Institute for Materials Science, Tsukuba, Ibaraki, Japan
- 16.40 *Coffee Break*

Session A-2 - Stimuli Responsive Polymers and Gels

Room: ORLANDO B

Chair: S. VERBRUGGHE, Ghent University, Ghent, Belgium

- 15.30 *A-2: IL01* **Ionic Polymeric Conductor Nano Composites (IPCNC's) as Distributed Nanosensors and Nanoactuators**
M. SHAHINPOOR, University of Maine, Orono, ME, USA
- 16.00 *A-2: L03* **Design and Optimization of IPMC for Biomedical Applications**
CHOONGHEE JO, H.E. NAGUIB, R.H. KWON, University of Toronto, Toronto, Ontario, Canada
- 16.20 *A-2: L05* **Static and Dynamic Electroresponse of Triblock Polymer Gel Actuator**
T.I. VALADAS LEITAO, S.J. PICKEN, E. MENDES, Delft University of Technology, Delft, The Netherlands
- 16.40 *Coffee Break*

MONDAY JUNE 9 AFTERNOON

Session A-9 - Recent Development in Electrical Writable Organic Memory Devices

Room: ORLANDO B

Chair: D. TSOUKALAS, Technical University Athens, Zographou, Greece

- 17.10 *Welcome by Special Session A-9 Coordinator:*
SHASHI PAUL, De Montfort University, Leicester, UK
- 17.15 *A-9: IL01 Organic Memory Devices from C60 and Insulating Polymers*
M. CHHOWALLA, Rutgers University, Piscataway, NJ, USA
- 17.45 *A-9: L08 Floating Charge Storage Centers for Non-volatile Organic Memory Applications Enabled by In-situ Synthesis of Gold Nanoparticles in a Self-assembled Block Copolymer*
W.L. LEONG, P.S. LEE, T.P. CHEN, S.G. MHAISALKAR, Nanyang Technological University of Singapore, Singapore
- 18.05 *A-9: L10 Non-volatile Memory Devices Based on Diphenyl Bithiophenes*
E.V. CANESI, C. BERTARELLI, A. BIANCO, M. CAIRONI, G. DASSA, D. FAZZI, D. NATALI, M. SAMPIETRO, G. ZERBI, Politecnico di Milano, Milano, Italy

Session A-10.1 - Materials

Room: RINALDO B

Chair: E. CESARI, Universidad de les Illes Balears, Palma de Mallorca, Spain

- 15.30 *A-10.1: IL03 Combinatorial Search of Shape Memory Alloys and Other Smart Materials*
ICHIRO TAKEUCHI, University of Maryland, College Park, MD, USA
- 16.00 *A-10.1: L06 Texture Analysis and Magnetic Properties of Ni-Mn-Ga Magnetic Shape Memory Thin Films Deposited using Pulsed Laser Deposition*
YUEPENG ZHANG, G.A. BOTTON, M. NIEWCZAS, R.A. HUGHES, J.S. PRESTON, McMaster University, Hamilton, Ontario, Canada
- 16.20 *A-10.1: L07 Development of Cu-Al-Mn Based Shape Memory Alloys: Phase Stability and Microstructural Control*
TOSHIHIRO OMORI, Y. SUTOU, R. KAINUMA, K. ISHIDA, Tohoku University, Sendai, Japan
- 16.40 *Coffee Break*

MONDAY JUNE 9 AFTERNOON

Session A-11.1 - Adaptive / Active Textiles

Room: BELLINI

Chair: R.E. GORGA, North Carolina State University, Raleigh, USA

- 15.00 *A-11.1: IL02* **Optical Responses of Nano- and Micro-structured Polymeric Photonic Fibers for Flexible Intelligent Structures**
XIAOMING TAO, The Hong Kong Polytechnic University, Kowloon, Hong Kong
- 15.30 *A-11.1: IL04* **The Investigation about the Shape Memory Behavior of Wool**
JINLIAN HU, ZHENG-E DONG, YAN LIU, YIJUN LIU, The Hong Kong Polytechnic University, Kowloon, Hong Kong
- 16.00 *A-11.1: IL05* **Production, Properties and Applications of Spun Carbon Nanotube Yarns and Knitted Tubes**
K.R. ATKINSON, S.R. HUTTON, C. SKOURTIS, CSIRO Textile & Fibre Technology, Geelong, Victoria, Australia
- 16.30 *Coffee Break*

Chair: XIAOMING TAO, Hong Kong Polytechnic University, Kowloon, Hong Kong

- 17.00 *A-11.1: L07* **Photochromic Wool Fabrics with Enhanced Durability and Photochromic Performance**
TONG LIN, TONG CHENG, REX BRADY, XUNGAI WANG, Deakin University, Geelong, Vic, Australia
- 17.20 *A-11.1: L08* **Designing with a Responsive Colour Palette: The Development of Colour and Pattern Changing Products**
S. ROBERTSON, R.M. CHRISTIE, S.E. TAYLOR, Heriot-Watt University, Galashiels, UK

Session A-11.2 - E-textiles

- 17.40 *A-11.2: IL09* **Woven Logic with Electrochemical Transistors**
O. INGANAS, M. HAMED, R. FORCHHEIMER, Linköpings Universitet, Linköping, Sweden

Session B-1 - Smart Optical Materials

B-1.1 Spectrally Active Materials and Devices

Room: ORLANDO C

Chair: YOICHI KAWAKAMI, Kyoto University, Kyoto, Japan

- 15.00 *B-1.1: IL01 Semi-metallic Materials for Spectral Variation*
SANG H. CHOI, NASA Langley Research Center, Hampton, VA, USA; YEONJOON PARK, National Institute of Aerospace, Hampton, VA, USA
- 15.30 *B-1.1: IL02 Advances in All-solid-state Switchable Mirror Devices*
K. YOSHIMURA, K. TAJIMA, Y. YAMADA, AIST, Nagoya, Japan
- 16.00 *B-1.1: IL03 Hydrogen-driven Switchable Mirrors*
R. GRIESSEN, B. DANN, H. SCHREUDERS, M. SLAMAN, VU University, Amsterdam, The Netherlands
- 16.30 Coffee Break

B-1.3 Light Emitting Materials

Room: ORLANDO C

Chair: R. GRIESSEN, University of Amsterdam, Amsterdam, The Netherlands

- 17.00 *B-1.3: IL01 Characterization and Control of Recombination Dynamics in Low-dimensional InGaN-based Semiconductors*
Y. KAWAKAMI, A. KANETA, M. FUNATO, Kyoto University, Kyoto, Japan; Y. NARUKAWA, T. MUKAI, Nichia Corporation, Tokushima, Japan
- 17.30 *B-1.3: IL02 Nano-engineering of III-nitride Semiconductor Optoelectronics and New Applications*
N. TANSU, R.A. ARIF, YIK-KHOON EE, HONGPING ZHAO, HUA TONG, M. JAMIL, G.S. HUANG, Lehigh University, Bethlehem, PA, USA

B-2.2 Adaptive Optical Elements and Adaptive / Smart Structures

- 18.00 *B-2.2: L07 Electrochemistry for Variable Optics*
C.W. MONROE¹, L. DAIKHIN², M. URBACH², A. SLEIGHTHOLME¹, A. KUCERNAK¹, A.A. KORNYSHEV¹, ¹Imperial College London, UK; ²Tel Aviv University, Ramat Aviv, Israel

MONDAY JUNE 9 AFTERNOON

Session C-1 - Smart Materials, Sensors / Actuators and Microsystems

Room: MANFREDI A

Chair: S.R. WHITE, University of Illinois at Urbana, USA

15.00 *C-1: IL01* **Conductive Nanoparticle Liquids and Proto-Assemblies: Regenerative Surfaces for Relays and MEMs**
R. VAIA, S. DIAMANTI, R. MacCUSPIE, KYOUNGWEON PARK, H. KOERNER, S. PATTON, A. VOEVODIN, Air Force Research Laboratory, WPAFB, OH, USA

15.30 *C-1: IL02* **Mechatronics: The Innovation Request**
H. IRSCHIK, Johannes Kepler University of Linz, Linz, Austria

16.00 *C-1: IL03* **Current Research Activities in Mechatronic Applications at AM-TUM**
H. ULBRICH, Technical University of Munich, Garching, Germany

16.30 Coffee Break

Chair: A. PREUMONT, Université Libre de Bruxelles, Bruxelles, Belgium

17.00 *C-1: IL04* **Piezoelectricity Experimentation, Modelling and Simulation: Common Practices and Realistic Considerations**
A. BENJEDDOU, Institut Supérieur de Mécanique de Paris, Saint Ouen, France

17.30 *C-1: IL05* **Bio-inspired Autonomic Structures**
R.A. SHOURESHI, University of Denver, Denver, CO, USA

MONDAY JUNE 9 AFTERNOON

Session C-3 - Smart Structures and Integrated Systems

Room: MANFREDI B

Chair: YOZO FUJINO, The University of Tokyo, Tokyo, Japan

- 15.30 *C-3: L01* **Monitoring Prestress Level in Seven-wire Prestressing Tendons by Inter-wire Ultrasonic Wave Propagation**
F. LANZA DI SCALEA, I. BARTOLI, S. SALAMONE, R. PHILLIPS, University of California, San Diego, La Jolla, CA, USA; C. SIKORSKY, California Department of Transportation, USA
- 15.50 *C-3: L02* **A Vibration Excitor for Evaluating Cable Damping of a Cable-stayed Bridge**
JAE-MIN KIM, Chonnam National University, Yeosu, Chonnam, Korea; JONG-JAE LEE, Saejong University, Seoul, Korea; SANG-SUP AHN, Korea Expressway Corporation, Hwa-Sung, Kyunggi, Korea; JUN-SEONG CHOI, KMC Inc., Seoul, Korea
- 16.10 *C-3: L03* **Performance Evaluation of a Nonlinear Cable Damper for a Stay Cable Using Wind Vibration Analysis**
SAANG BUM KIM, S.J. LEE, W.J. YU, Samsung E&C, Sungnam-Si, Korea
- 16.30 *Coffee Break*

Chair: T.P. RUSSELL, Air Force Office of Scientific Research, Arlington, VA, USA

- 17.00 *C-3: L05* **Response Control Performance Evaluation of MR Damper by Shaking Table Tests and Real-time Hybrid On-line Tests**
HIDEO FUJITANI, HIDEKI FUJII, MAI ITO, HIROAKI SAKAE, Kobe University, Kobe, Japan
- 17.20 *C-3: L06* **A Reliability Assessment Model for MR Damper Components within a Structural Control Scheme**
M.H.M. HASSAN, British University in Egypt, Al-Shorouk City, Cairo, Egypt
- 17.40 *C-3: L08* **Anti-overturning Control of Serially Connected Isolation System Using Piezo Electric and MR Tube Support**
YONGFENG DU, YANHUI LIU, HUI LI, Lanzhou University of Technology, Lanzhou, PR China

Session D-1 - Advances in Smart Materials Synthesis and Functionality

Room: RINALDO C

Chair: A. LENDLEIN, GKSS Research Centre, Geesthacht, Teltow, Germany

15.30 *D-1: IL03* **Self-oscillating Gel as Smart Materials**
RYO YOSHIDA, The University of Tokyo, Tokyo, Japan

16.00 *D-1: IL05* **Bioinspired Polymer Surfaces for Nanodevices and Nanomedicine**
KAZUHIKO ISHIHARA, The University of Tokyo, Tokyo, Japan

16.30 *D-1: L06* **Functionalisation of Carbon Nanotubes for Improved Cellular Adhesion**
R.L. SPEAR, E. EDER, A.H. WINDLE, S.M. BEST, R.E. CAMERON, N. RUSHTON, R. BROOKS, University of Cambridge, Cambridge, UK

16.50 *Coffee Break*

Chair: H.E. NAGUIB, University of Toronto, Toronto, Canada

17.20 *D-1: IL07* **Smart Hydrogels that Respond to Target Biomolecules**
TAKASHI MIYATA, Kansai University, Osaka, Japan

17.50 *D-1: L08* **Electrochemically Tailored Stability of Layer-by-layer Polyelectrolyte Films**
L. DIÉGUEZ^{1,2}, T. ZAMBELLI¹, F. BOULMEDAIS³, P. SCHAAF³, J. VÖRÖS¹, ¹University and ETH Zurich, Switzerland; ²University of Barcelona, Spain; ³Inst. Charles Sadron, CNRS, Strasbourg, France

18.10 *D-1: L09* **Biocompatible Near Infrared Fluorescent Labels Based on Apoferritin-encapsulated PbS Quantum Dots**
L. TURYSKA, B. HENNEQUIN, N.R. THOMAS, A. PATANE, University of Nottingham, Nottingham, UK; T. BEN, A.M. BELTRAN, S.I. MOLINA, Universidad de Cadiz, Puerto Real, Spain

MONDAY JUNE 9 AFTERNOON

Session E-1 - Algorithms, Mechanisms and Structures in Nature as Inspiration for Mimicking

Room: RINALDO A

E-1.1 Biological Approaches and Solutions

Chair: G. JERONIMIDIS, University of Reading, Reading, UK

15.20 *E-1.1: IL04* **Sensorimotor Coordination Abilities of Animals as Inspiration for the Control of Robots' Locomotion**
A.J. IJSPEERT, Ecole Polytechnique Federale de Lausanne, Switzerland

15.50 *E-1.1: L06* **Multi-scale Optical Response of Structured Surfaces in Living Organisms**
J.P. VIGNERON, M. RASSART, University of Namur, Namur, Belgium

16.20 *Coffee Break*

E-1.2 Biomechanics

Chair: A. IJSPEERT, EPFL, Lausanne, Switzerland

17.10 *E-1.2: IL01* **Flight Control of an Insect**
SHIGERU SUNADA, Osaka Prefecture University, Osaka, Japan

17.40 *E-1.2: IL02* **Wood Biomechanics**
L. SALMEN, STFI-Packforsk, Stockholm, Sweden

18.10 *E-1.2: L03* **Different Influence of Surface Energy and Surface Roughness on the Adhesive Ability of Female and Male Beetles *Gastrophysa Viridula***
NAOE HOSODA¹, S.N. GORB², ¹National Institute for Material Science, Tsukuba, Ibaraki, Japan; ²Max Planck Institute for Metals Research, Stuttgart, Germany

Session E-3 - Bio-inspired Sensors and Actuators

E-3.1 Sensors

Room: ETNA

Chair: R. ALLEN, University of Southampton, Southampton, UK

- 15.30 *E-3.1: L01 Remote Electrical Sensing: Object Detection and Analysis Inspired by Electric Fishes*
G. VON DER EMDE, A. PADBERG, University of Bonn, Bonn, Germany
- 15.50 *E-3.1: L02 Towards Biocompatible Sensing Devices: an IPMC Based Artificial Vestibular System*
C. BONOMO, L. FORTUNA, S. GRAZIANI, D. NICOLOSI, G. SICURELLA, Universita' degli Studi di Catania, Catania, Italy; M. LA ROSA, STMicroelectronics, Catania, Italy
- 16.10 *E-3.1: L03 Magnetic Field Sensing by Magnetotactic Bacteria and Elasticity of Cytoskeleton*
K. ERGLIS, A. CEBERS, University of Latvia, Riga, Latvia
- 16.30 *E-3.1: IL04 Bioelectronic Detection Schemes for Biomedical and Environmental Sensing*
A. OFFENHÄUSSER, Forschungszentrum Jülich, Jülich, Germany

17.00 *Coffee Break*

Chair: A. CEBERS, University of Latvia, Riga, Latvia

- 17.30 *E-3.1: L05 Double Layer Sensors Reproducing Perception Dynamics of Olfactory Cells*
A. MACAGNANO¹, E. ZAMPETTI¹, B.R. PISTILLO², A. BEARZOTTI¹, S. PANTALEI¹, R. D'AGOSTINO², ¹IMM-CNR, Rome, Italy; ²Università di Bari, Bari, Italy
- 17.50 *E-3.1: L06 Determining the Binaural Signals in Bat Echolocation*
T. PAPADOPOULOS, R. ALLEN, University of Southampton, Southampton, UK
- 18.10 *E-3.1: L07 Generating Bio-Analogous Recognition in Artificial Materials - Sensors and Electronic Noses for Odours*
P.A. LIEBERZEIT, A. REHMAN, B. NAJAFI, F.L. DICKERT, University of Vienna, Vienna, Austria

<p>19.00 - 20.00 "Get Together" (Welcome Drinks)</p>
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TUESDAY JUNE 10 MORNING

Session A-1 - Ferroelectric, Piezoelectric, Electrostrictive and Magnetostrictive Single Crystal and Polycrystalline Ceramics and Metal Alloys

Room: ORLANDO A

Chair: JING-FENG LI, Tsinghua University, Beijing, China

- 8.50 *A-1: IL11* **Constitutive Modeling for Design and Control of Magnetostrictive Galfenol Devices**
M. DAPINO, The Ohio State University, Columbus, OH, USA
- 9.20 *A-1: IL12* **New Multifunctional Materials Based on BiFeO₃**
A.J. BELL, University of Leeds, Leeds, UK
- 9.50 *A-1: IL13* **Novel Magnetostrictive Nanobars for High Performance Biological Detection**
Z.-Y. CHENG, SUIQIONG LI, KEWEI ZHANG, LILING FU, BYRAN CHIN, Auburn University, Auburn, AL, USA
- 10.20 *A-1: IL14* **Multilayered Magnetic Films and Fibers for Electromagnetic Sensor Technology**
L.V. PANINA^{1,2}, A. ZHUKOV¹, J. GONZALEZ¹, D.P. MAKHNOVSKIY²,
¹Universidad del Pais Vasco, San Sebastian, Spain; ²University of Plymouth, Plymouth, UK
- 10.50 *A-1: L15* **Numerical Advances on a Hyperbolic-parabolic Problem Arising in Magnetoelasticity**
V. VALENTE, F. PISTELLA, IAC-CNR, Rome, Italy
- 11.10 *Coffee Break*
- Chair:* M. DAPINO, The Ohio State University, Columbus, OH, USA
- 11.30 *A-1: IL16* **Piezoelectric Properties of Sputtered AlN Thin Films and their Application**
U. SCHMID, Saarland University, Saarbruecken, Saarland, Germany
- 12.00 *A-1: IL17* **Piezoelectric Ceramic Films for MEMS Applications**
JING-FENG LI, ZHI-XIANG ZHU, YING XU, FENG-PING LAI, Tsinghua University, Beijing, P.R. China
- 12.30 *A-1: L18* **The Use of Different Fibres Geometry and Sintering Conditions for AFC Structures**
F. CLEMENS, M.R. ISMAEL, J. HEIBER, R. PARADIES, T. GRAULE, EMPA, Duebendorf, Switzerland; M. PIECHOWIAK, L. KOZIELSK, D. CZEKAJ, University of Silesia, Sosnowiec, Poland
- 12.50 *A-1: L19* **Production of 3Y-PSZ Powders by Co-precipitation and Milling**
E. FURLANI, E. ANEGGI, S. MASCHIO, University of Udine, Udine, Italy

TUESDAY JUNE 10 MORNING

Session A-2 - Stimuli Responsive Polymers and Gels

Room: ORLANDO B

Chair: M. SHAHINPOOR, University of Maine, Orono, ME, USA

- 9.20 *A-2: IL06* **Shape-memory Polymers for Biomedical Applications**
A. LENDLEIN, GKSS Research Centre Geesthacht, Teltow, Germany
- 9.50 *A-2: L08* **Photoresponsive Liquid Crystal Elastomers with Large Deformation and Fast Movement**
T.J. WHITE^{1, 2}, V.P. TONDIGLIA^{1, 3}, H. KOERNER^{1, 4}, S. SERAK⁵, V. GROZHIK⁵, N. TABIRIYAN⁵, R.A. VAIA¹, T.J. BUNNING⁵, ¹Air Force Research Lab., WPAFB, OH, USA; ²General Dynamics IT, WPAFB, OH, USA; ³Science Applications International Corp.; ⁴University of Dayton; ⁵BEAM Company
- 10.10 *A-2: L09* **Tailor-made Segmented Polymers: Versatile Smart Materials**
S. VERBRUGGHE, F. DU PREZ, Ghent University, Ghent, Belgium
- 10.30 *A-2: L10* **Smart Reverse Thermoresponse Hydrogel**
M. DOLATKHANI, PolymerExpert SA, Pessac, France
- 10.50 *Coffee Break*

TUESDAY JUNE 10 MORNING

Session A-10.3 - Engineering

Room: RINALDO B

Chair: V.A. CHERNENKO, Institute of Magnetism, Kiev, Russia

- 9.30 *A-10.3: IL01* **Shape-memory Alloys: Effective 3D Modelling, Computational Aspects and Micro-device Design**
F. AURICCHIO, A. REALI, Università degli Studi di Pavia, Italy
- 10.00 *A-10.3: IL02* **Engineering Aspects of Shape Memory Thin Film Actuators and Sensors**
M. KOHL, Forschungszentrum Karlsruhe, Karlsruhe, Germany
- 10.30 *A-10.3: L03* **Transformation / Deformation Behavior and its Constitutive Equation for Ti-Ni-Cu Shape Memory Alloy**
Y. TAKEDA, TAKE R&D, Japan; T. YAMAMOTO, T. SAKUMA, Oita University, Oita, Japan
- 10.50 *A-10.3: L04* **Effect of Microvoids on Plasticity in NiTi-alloy**
J.S. OLSEN, Z.L. ZHANG, Norwegian University of Science and Technology, Trondheim, Norway; C. VAN DER EIJK, Sintef, Trondheim, Norway
- 11.10 *Coffee Break*

Session A-10.4 - Composites & Coatings

Room: RINALDO B

Chair: J. VAN HUMBEECK, KU Leuven, Heverlee, Belgium

- 11.40 *A-10.4: IL01* **Submicronic Technology of Ferromagnetic Martensites: Scientific and Applied Aspects**
V.A. CHERNENKO, Institute of Magnetism, Kiev, Ukraine
- 12.10 *A-10.4: L02* **Ni₂MnGa - Polymer Composites for Active Vibration Dampening**
O. GUTFLEISCH, N. SCHEERBAUM, J. LIU, D. HINZ, L. SCHULTZ, IFW Dresden, Dresden, Germany
- 12.30 *A-10.4: L03* **Selection of Polymer Matrices for SMA Composite through DSC Analysis**
D. CLAUSI, D. REYNAERTS, J. PEIRS, J. VAN HUMBEECK, Katholieke Universiteit Leuven, Leuven, Belgium

Session A-12.1 - Materials

Room: **ORLANDO B**

Chair: Y. BAR-COHEN, CALTECH, Pasadena, CA, USA

11.25 *Welcome by Focused Session A-12 Coordinator:*
Y. BAR-COHEN, CALTECH, Pasadena, CA, USA

11.30 *A-12.1: IL03* **Synthesis and Characterization of IPNs for Electrochemical Actuators**
F. VIDAL¹, C. PLESSE¹, G. PALAPRAT¹, J. JUGER¹, J. CITERIN², A. KHEDDAR², C. CHEVROT¹, D. TEYSSIE¹, ¹Université de Cergy-Pontoise, Cergy-Pontoise, France; ²Université d'Evry, France

12.00 *A-12.1: IL06* **Fault-tolerant Dielectric Elastomers**
QIBING PEI, WEI YUAN, University of California, Los Angeles, CA, USA

12.30 *A-12.1: IL07* **Electroactive Polymer Actuator with Ionic-liquid-based Bucky Gel**
KINJI ASAKA, KEN MUKAI, ICHIRO TAKEUCHI, TAKUSHI SUGINO, KENJI KIYOHARA, NAOHIRO TERASAWA, AIST, Osaka, Japan

Session B-2 - Passive, Active and Adaptive Optical Devices and Systems

Room: ORLANDO C

B-2.3 Advanced Material Processes and Fabrication Technologies

Chair: G.C. RIGHINI, CNR, Rome, Italy

- 9.00 *B-2.3: IL01 Glass Ceramic Phosphors: all Inorganic Solution for Solid-state Lighting*
SETSUHISA TANABE, Kyoto University, Kyoto, Japan
- 9.30 *B-2.3: IL02 Micro- and Nano-fabrication Technologies for Microoptical Elements & Systems*
E.-B. KLEY, Friedrich-Schiller University Jena, Jena, Germany
- 10.00 *B-2.3: IL03 Smart Processing of Micro Ceramic Structures: Development of Photonic Crystals and Fractals for Terahertz Wave Control by Using Micro-stereolithography*
SOSHU KIRIHARA, Osaka University, Ibaraki, Osaka, Japan
- 10.30 *B-2.3: IL04 Photomasks for Semiconductor Lithography: from Simple Shadow Casters to Complex 3D Scattering Objects*
A. ERDMANN, D. REIBOLD, T. FÜHNER, P. EVANSCHITZKY, Fraunhofer Institute IISB, Erlangen, Germany
- 11.00 Coffee Break

Session B-1 - Smart Optical Materials

Room: ORLANDO C

B-1.2 Functional Materials and Liquid Crystals

Chair: SETSUHISA TANABE, Kyoto University, Kyoto, Japan

- 11.30 *B-1.2: IL03 Coordinating Superaromatic Ligands: Synthetic and Photophysical Considerations*
S. DRAPER, University of Dublin, Dublin, Ireland
- 12.00 *B-1.2: IL04 Domain Reversal Patterning of Nanoscale Structures in Lithium Niobate*
P. FERRARO, S. GRILLI, CNR, Pozzuoli, Napoli, Italy
- 12.30 *B-1.2: IL05 Ferroelectric and Mesoscopical-Magnetic Properties of All-organic Chiral Nitroxide Radical Liquid Crystals*
R. TAMURA, Kyoto University, Kyoto, Japan

**Session C-1 - Smart Materials, Sensors / Actuators
and Microsystems**

Room: **MANFREDI A**

Chair: B.L. (Les) LEE, Air Force Office of Scientific Research,
Arlington, USA

- 9.30 *C-1: L06* **Soft Development Modules for Microcontroller-based Systems**
M.C. EDMONDSON, L. TANG, Massey University, Palmerston North,
New Zealand
- 9.50 *C-1: L07* **A Self-sensing Wedge-wave Ultrasonic Motor Using Modal Sensors**
TAI-HO YU, CHING-CHUNG YIN, National Chiao Tung University,
Hsinchu, Taiwan, R.O.C.
- 10.00 *C-1: L08* **Development of a New Ferroelectric Shell Finite Element. Application to a Smart Micro-component Design**
W. ZOUARI¹, M. ELHADROUZ², T. BEN ZINEB¹, ¹LEMETA, Nancy University, CNRS, Vandoeuvre-lès- Nancy, France; ²LPMM, ENSAM, CNRS, Metz, France
- 10.30 *C-1: L09* **Multi-scale Characterization of Ferroelectric Materials**
S. PRUVOST, G. SEBALD, A. HAJJAJI, L. LEBRUN, D. GUYOMAR, INSA-Lyon, Villeurbanne, France
- 10.50 Coffee Break
- Chair:* A. BENJEDDOU, Institut Supérieur de Mécanique de Paris, Saint Ouen, France
- 11.20 *C-1: L10* **Dynamic Displacement Tracking for Frame Structures with a Piezoelectric Patch Network based on Plate Theory Calculations**
D. HUBER, Linz Center of Mechatronics, Linz, Austria; M. KROMMER, H. IRSCHIK, Johannes Kepler University, Linz, Austria
- 11.40 *C-1: L12* **Enhanced Piezoelectric Nanocomposites Fabricated through Electrospun Piezoceramic Nanowires**
H.A. SODANO, Arizona State University, Tempe, AZ, USA; J. FEENSTRA, Michigan Technological University, USA
- 12.00 *C-1: L13* **Ultrasonic Extension Sensing of Actuators Using Integrated Piezoelectric Transducer for Adaptive Optics**
A. UZGUR¹, S. KIM¹, J. M. D. STRACHAN², K. J. KIRK¹, ¹University of Paisley, UK; ²UK Astronomy Technology Centre, Edinburgh, UK

Session C-2 - Integration Technologies

Room: **MANFREDI B**

Chair: S.C. LIU, National Science Foundation, Arlington, USA

10.00 *C-2: IL01* **Integrated Design of Smart Structures**
G.P. CIMELLARO, T.T. SOONG, A.M. REINHORN, State University
of New York, Buffalo, NY, USA

10.30 *C-2: IL02* **Adaptive Solutions for Intelligent Cable-vibration
Mitigation**
L. FARAVELLI, C. FUGGINI, F. UBERTINI, University of Pavia, Pavia,
Italy

11.00 *Coffee Break*

Chair: H. IRSCHIK, University of Linz, Linz, Austria

11.30 *C-2: IL05* **Optimal Simulations for Large Dynamic Systems**
R. SKELTON¹, F. LI², M. DE OLIVEIRA¹, ¹UCSD, La Jolla, CA, USA;
²Xerox Corp.

12.00 *C-2: IL06* **The Art of Control Algorithms Design and
Implementation**
J. RODELLAR, F. IKHOUANE, Universitat Politecnica de Catalunya,
Barcelona, Spain

TUESDAY JUNE 10 MORNING

Session D-1 - Advances in Smart Materials Synthesis and Functionality

Room: RINALDO C

Chair: T. VERES, National Research Council Canada, Montreal, Canada

- 9.00 *D-1: IL10 Encouraging Nature with Ceramics*
K. HING, Queen Mary University of London, London, UK
- 9.30 *D-1: L11 Synthesis of Bioactive Hydroxyapatite-zirconia Toughened Composites for Bone Replacement*
B. CIONI, A. LAZZERI, G. GALLONE, G. LEVITA, University of Pisa, Pisa, Italy
- 9.50 *D-1: IL12 Generating and Optimising Geometry of Shape Memory Alloy-Textile Composites for Vascular Intervention*
T. ANSON, Brunel University, Uxbridge, Middlesex, UK; P. DYER, University of Brighton, Brighton, UK
- 10.20 *D-1: L13 Delinquent Sensors & Schizophrenic Materials: Using Molecular Switches to Make Materials with multiple personalities*
D. DIAMOND, Dublin City University, Dublin, Ireland
- 10.40 *D-1: L14 Synthesis and Characterization of Nanoparticles of La_{1-x}AgyMnO_{2.95} for Biomedical Application*
O.V. MELNIKOV, O.YU. GORBENKO, M.N. MARKELOVA, A.R. KAUL, Lomonosov Moscow State University, Moscow, Russia; V.A. ATSARKIN, V.V. DEMIDOV, Institute of Radio Engineering and Electronics, Russian Academy of Sciences, Moscow, Russia
- 11.00 *Coffee Break*

Session D-2 - Enabling Tools

Room: RINALDO C

Chair: K. HING, Queen Mary University of London, London, UK

- 11.30 *D-2: IL01 Micro-nanotechnology for Biomedical Applications*
R. WECHSUNG, Boehringer Ingelheim microParts GmbH, Dortmund, Germany
- 12.00 *D-2: IL02 Multifunctional Magnetic Nanocarriers: from Material Design to Magnetic Manipulation for Diagnostic Applications*
T. VERES, Industrial Materials Institute, National Research Council Canada, Montreal, Canada
- 12.30 *D-2: L03 Microsystems for Blood Cell Counting*
N. PIACENTINI, D. DEMARCHI, P. CIVERA, M. KNAFLITZ, Politecnico di Torino, Torino, Italy

TUESDAY JUNE 10 MORNING

Session E-1 - Algorithms, Mechanisms and Structures in Nature as Inspiration for Mimicking

Room: RINALDO A

E-1.1 Biological Approaches and Solutions

Chair: M. ELICES, Universidad Politecnica de Madrid, Madrid, Spain

- 9.00 ***E-1.1: IL07 Cells, Gels and Water: A Fresh Approach to Cell Function***
G.H. POLLACK, University of Washington, Seattle, WA, USA
- 9.40 ***E-1.1: IL08 New Insights in Viral Symmetry***
R. TWAROCK, University of York, York, UK
- 10.20 ***E-1.1: IL09 Approaches to the Construction of the Minimal Cell***
P.L. LUISI, P. STANO, University of Rome3, Rome, Italy
- 10.50 ***E-1.1: IL10 Molecular Biomimetics: Genome-based Molecular Materials for Technology & Medicine***
M. SARIKAYA, University of Washington, Seattle, WA, USA
- 11.20 *Coffee Break*

E-1.3 Biologically Inspired Structures

Chair: M. SARIKAYA, University of Washington, Seattle, WA, USA

- 11.50 ***E-1.3: IL01 Micropatterned Adhesive Surfaces: Recent Advances***
E ARZT, A. DEL CAMPO, INM - Leibniz Institute for New Materials, Saarbruecken, Germany
- 12.20 ***E-1.3: L03 Investigating the Thrust Productions of a Myliobatoid-inspired Oscillating Wing***
K. MOORED, H. BART-SMITH, University of Virginia, Charlottesville, VA, USA

"Buffet Lunch": 13.00 - 14.45

Session A-5 - Smart Multifunctional Materials and Composites

Room: ORLANDO A

Chair: R.K. PANDEY, Texas State University, San Marcos, TX, USA

- 15.10 *A-5: IL01 Composite Coatings with Phase Change Materials for Thermal Actuation*
L. STAPPERS, J. FRANSAER, A. MALFLIET, Katholieke Universiteit Leuven, Heverlee, Belgium
- 15.40 *A-5: L04 Self Healing of Mechanical Damage in Metallic Materials*
NORIO SHINYA, National Institute for Materials Science, Tsukuba, Ibaraki, Japan
- 16.00 *Coffee Break*

Session A-6 - Hybrid Active Materials Systems

Room: ORLANDO A

Chair: J. FRANSAER, KU Leuven, Heverlee, Belgium

- 16.30 *A-6: L01 Multiscale Molecular Modeling of Hybrid Organic-inorganic Nanocomposites of Type I and II*
M. FERMEGLIA, P. POSOCCO, S. PRICL, University of Trieste, Trieste, Italy; M. MALY, Academy of Sciences of the Czech Rep., Prague, Czech Republic
- 16.50 *A-6: L02 Structural Design of Smart Organic-inorganic Hybrid Membranes from Quaternized Chitosan and Alkoxysilane*
TADASHI URAGAMI, Kansai University, Suita, Osaka, Japan
- 17.10 *A-6: L03 Ultrafilm Formation by Gamma-ray Induced Polymerization in Surfactant Template on Solid Surface*
T. PONGPRAYOON, King Mongkut's Institute of Technology North Bangkok, Bangkok, Thailand
- 17.30 *A-6: L04 Bistable Buckled Beam: Modelling and Piezo-electric Actuation*
C. MAURINI¹, J. POUGET¹, S. VIDOLI², ¹Université Pierre et Marie Curie, Paris, France; ²University "La Sapienza", Rome, Italy
- 17.50 *A-6: L05 Design of Smart Material Based Actuators for Bistable Structures*
P. CAZOTTES^{1,2}, A. FERNANDES¹, J. POUGET¹, M. HAFEZ², ¹Université Pierre et Marie Curie, Paris, France; ²Sensory Interfaces Laboratory, Fontenay-aux-Roses, France

TUESDAY JUNE 10 AFTERNOON

Session A-9 - Recent Development in Electrical Writable Organic Memory Devices

Room: ORLANDO B

Chair: M. CHOWALLA, Rutgers University, Piscataway, NJ, USA

- 15.00 *A-9: IL04* **Nanoparticles for Charge Storage**
D. TSOUKALAS, National Technical University of Athens, Zografou, Greece; M.C. PETTY, Durham University, Durham, UK
- 15.30 *A-9: L11* **Resistive Electrical Switching of Nonvolatile Memories from Electrodeposited Copper Tetracyanoquinodimethane (CuTCNQ)**
R. MÜLLER, A. KATZENMEYER, O. ROUAULT, L. GOUX, D.J. WOUTERS, J. GENOE, P. HEREMANS, IMEC v.z.w., Leuven, Belgium
- 15.50 *A-9: L12* **Effect of Various Electrode Materials in Non-volatile Memory Device using Poly(3,4-ethylenedioxythiophene): Poly(styrenesulfonate) (PEDOT:PSS) Thin Films**
H. HA, J. LEE, M. KIM, O. KIM, Pohang University of Science and Technology, Pohang, Republic of Korea
- 16.10 *A-9: L13* **Organic Memory Devices with Negative Differential Resistance and their Physical Interpretation**
J. BARAL, H.S. MAJUMDAR, R. ÖSTERBACKA, Åbo Akademi University, Turku, Finland; A. LAIHO, J. RUOKOLAINEN, R. RAS, O. IKKALA, Helsinki University of Technology, Helsinki, Finland
- 16.30 *Coffee Break*

Session A-3 - Shape Memory Polymers & Magnetorheological Fluids

Room: ORLANDO B

Chair: T.J. WHITE, Air Force Research Lab., WPAFB, OH, USA

- 17.00 *A-3: IL01* **Ferrofluids and Magnetorheological Fluids**
L. VEKAS, University Politehnica Timisoara, Timisoara, Romania
- 17.30 *A-3: L02* **Synthesis and Evaluation of a New Class of Shape Memory Materials based on Multi-Block Copolymers**
S. D'HOLLANDER, F.E. DU PREZ, Ghent University, Ghent, Belgium
- 17.50 *A-3: L03* **Micromechanical Modelling of Shape Memory Polymers**
M. BÖL, S. REESE, Braunschweig University of Technology, Germany

**Session A-10.2 - Phase Transformation and
Microstructure**

Room: **RINALDO B**

Chair: YOICHI KISHI, Kanazawa Institute of Technology, Ishikawa, Japan

- 15.00 *A-10.2: IL01* **In Situ Experimental Methods for Characterization of Deformation Processes in SMAs**
P. SITTNER, J. PILCH, Institute of Physics; P. LUKAS, Nuclear Physics Institute; M. LANDA, Institute of Thermomechanics, ASCR v.v.i., Prague, Czech Republic
- 15.30 *A-10.2: L02* **Effect of the Loading History on Shape Memory Alloy Transformation Temperatures**
G. FAIELLA, University of Naples, Naples, Italy; V. ANTONUCCI, M. GIORDANO, Institute for Composite and Biomedical Materials (CNR), Naples, Italy; F. DAGHIA, E. VIOLA, University of Bologna, Bologna, Italy
- 15.50 *A-10.2: L03* **Elemental Interfaces and Displacive Phase Transformations**
V. PAIDAR, Institute of Physics, ASCR v.v.i., Prague, Czech Republic
- 16.10 *A-10.2: L05* **Monte-Carlo Simulation of the Phase Transformation and the Magnetocaloric Properties in Ni-Mn-Ga Shape Memory Alloys**
V.D. BUCHELNIKOV, S.V. TASKAEV, V.V. SOKOLOVSKIY, Chelyabinsk State University, Chelyabinsk, Russia
- 16.30 *Coffee Break*

Session A-10.3 - Engineering

Room: RINALDO B

Chair: F. AURICCHIO, Pavia University, Pavia, Italy

- 17.00 **A-10.3: IL07 Experimental Characterization of NiTi SMAs Thermomechanical Behaviour Using Temperature and Strain Full-field Measurements**
P. SCHLOSSER^{1, 2}, D. FAVIER¹, H. LOUCHE², L. ORGEAS¹,
¹Universities Grenoble, France; ²SYMME, Polytech' Savoie, France
- 17.30 **A-10.3: L08 Thermomechanical Behavior of Tubular NiTi Textile Structures**
L. HELLER, D. VOKOUN, P. SITTNER, Academy of Sciences of the Czech Republic, Prague, Czech Republic
- 17.50 **A-10.3: L09 Functional Properties of Ti-Ni-based Shape Memory Alloys**
I. KHMELEVSKAYA, S. PROKOSHKIN, I. TRUBITSYNA, A. KOROTITSKIY, M. BELOUSOV, Moscow Institute of Steel and Alloys, Moscow, Russia; V. BRAILOVSKI, Ecole de Technologie Superieure, Montreal, Canada; S. DOBATKIN, Baikov Institute of Metallurgy and Material Science, Moscow, Russia; E. TATYANIN, Institute for High Pressure Physics, Troitsk, Russia; V. STOLYAROV, E. PROKOFIEV, Institute of Physics of Advanced Materials, Ufa, Russia
- 18.10 **A-10.3: L10 Influence of the Temperature and the Way of the Preliminary Plastic Deformation in Austenitic State of the Shape Memory Effect in Ti - 50.0 at. % Ni**
N. RESNINA, S. BELYAEV, I. UCHAEVA, Saint-Petersburg State University, Saint-Petersburg, Russia

Session B-1 - Smart Optical Materials

Room: BELLINI

B-1.1 Spectrally Active Materials and Devices

Chair: K. YOSHIMURA, AIST, Nagoya, Japan

- 16.40 *B-1.1: L04 Towards Electrochromic Devices Active in the Infrared Region*
K. SAUVET^{1,2}, L. SAUQUES², A. ROUGIER¹, ¹Laboratoire de Réactivité et Chimie des Solides, Amiens, France; ²DGA, Délégation Générale pour l'Armement-CEP, Arcueil cedex, France
- 17.00 *B-1.1: L05 Realization of Photochromic-polymeric Films for Optical Applications*
A. BIANCO^{1,2}, C. BERTARELLI², G. DASSA², G. TOSO², G. ZERBI²;
¹INAF-IASF, Istituto di Astrofisica Spaziale e Fisica Cosmica, Milano, Italy; ²Politecnico di Milano, Milano, Italy
- 17.20 *B-1.1: L06 Infrared Thermal Properties of RNiO3 Compounds*
C. NAPIERALA, Université François Rabelais, IUT Blois, and Centre d'Expertise Parisien, DGA, Arcueil, France ; M. EDELY, Université du Maine, France; P. LAFFEZ, Université François Rabelais, IUT Blois, France; L. SAUQUES, Centre d'Expertise Parisien, DGA, France
- 17.40 *B-1.1: L07 SmxNd1-xNiO3 Thin Films with Tunable Emissivity Coating*
P. LAFFEZ, C. NAPIERALA, Université F. Rabelais de Tours, Blois France; M. EDELY, S. GOUJON, Université du Maine, Le Mans, France; L. SAUQUES, Centre d'Expertise Parisien, Arcueil, France
- 18.00 *B-1.1: L09 Self-supported Electrochromic Devices Based on Interpenetrated Polymer Network: A Novel Competitive Monoblock Architecture*
P. VERGE, PH. AUBERT, F. VIDAL, L. BEOUCH, F. TRAN-VAN, DE TEYSSIÉ, C. CHEVROT, Université de Cergy-Pontoise, Cergy-Pontoise, France

Session B-1 - Smart Optical Materials

Room: ORLANDO C

B-1.3 Light Emitting Materials

Chair: M. FERRARI, CNR-IFN, Povo, Trento, Italy

- 15.00 *B-1.3: IL03* **Efficiency Limiting Processes in Semiconductor Lasers: Challenges and Solutions**
S.J. SWEENEY, University of Surrey, Guildford, UK
- 15.30 *B-1.3: IL04* **Glass Microspherical Lasers**
G. NUNZI CONTI, S. SORIA, Centro Studi e Ricerche "E. Fermi", Roma, Italy; S. BERNESCHI, M. BRENCI, S. PELLI, G.C. RIGHINI, IFAC-CNR, Sesto Fiorentino (FI), Italy; C. ARMELLINI, A. CHIAPPINI, A. CHIASERA, Y. JESTIN, M. FERRARI, IFN-CNR, Trento, Italy; L. GHISA, P. FÉRON, ENSSAT, Lannion, France
- 16.00 *B-1.3: L05* **Structural and Spectroscopic Assessment of Er³⁺-activated SiO₂-HfO₂ Glass Ceramics Planar Waveguides**
L. MINATI¹, G. SPERANZA¹, V. MICHELI¹, C. ARMELLINI², A. CHIAPPINI², A. CHIASERA², Y. JESTIN², M. FERRARI², R. RETOUX³, G.C. RIGHINI^{4,5}, ¹FBK-IRST, Povo, Italy; ² CNR-IFN, Povo-Trento, Italy; ³ENSICAEN, Caen, France; ⁴CNR, Roma, Italy; ⁵IFAC - CNR, Sesto Fiorentino (FI), Italy
- 16.20 *B-1.3: L07* **Rhodamine 6G Encapsuled Mesoporous Silica Channels**
P.S. SARAN¹, M.A.U. MARTINES¹, H.F. DE BRITO², G.R. DE CASTRO¹, N.L. DIAS FILHO¹, L.A. ROCHA³, Y. MESSADDEQ³, S.J.L. RIBEIRO³, ¹UNESP, Ilha Solteira, SP, Brazil; ² IQ-USP, SP, Brazil; ³UNESP, Araraquara, SP, Brazil
- 16.40 Coffee Break

Session B-2 - Passive, Active and Adaptive Optical Devices & Systems

Room: ORLANDO C

B-2.1 Optical MEMS, Smart Optical Sensors and Devices

Chair: S.J. SWEENEY, University of Surrey, Guildford, UK

- 17.10 *B-2.1: L06* **Characterization of Brightness of Electroluminescent Device Using Powder Phosphor Composite with ZnO or TiO₂**
MUN JA KIM¹, SUNG MIN PARK¹, SANG HYUN PARK², JIN YONG KIM¹, IN TACK HAN², AND JI-BEOM YOO¹, ¹Sungkyunkwan University, Suwon, Korea; ²Samsung Advanced Institute of Technology, Suwon, Korea
- 17.30 *B-2.1: L07* **Interferometric Sensors Realized with Micro-mirrors**
M. SICILIANI DE CUMIS¹, A. SEVERINO^{1, 2}, C. FREWIN³, S.E. SADDOW³, F. CATALIOTTI⁴, F. MARIN⁴, E. RIMINI^{1, 2}, G. D'ARRIGO²,
¹University of Catania, Catania, Italy; ²IMM-CNR, Catania, Italy; ³University of South Florida, Tampa, FL, USA; ⁴Universita' di Firenze and INFN Sezione di Firenze, Sesto Fiorentino (FI), Italy
- 17.50 *B-2.1: L08* **Two-wavelength Contouring of High Speed MEMS with Digital Holography Using Femtosecond Laser Pulses**
T. HANSEL, R. GRUNWALD, G. STEINMEYER, U. GRIEBNER, Max Born Institute, Berlin, Germany; J. BONITZ, C. KAUFMANN, Technical University Chemnitz, Chemnitz, Germany
- 18.10 *B-2.1: L09* **Optic Fiber Hydrogen Sensors Based on Mg-Ti**
M. SLAMAN, B. DAM, R. GRIESSEN, VU University, Amsterdam, The Netherlands

**Session C-1 - Smart Materials, Sensors / Actuators
and Microsystems**

Room: **MANFREDI A**

Chair: C.-B. YUN, KAIST, Daejeon, Korea

15.30 *C-1: IL16* **Microsystems Technologies for Use in Structures and Integrated Systems**

A. SCHÖNECKER, Fraunhofer IKTS, Dresden, Germany

16.00 *C-1: IL17* **Constitutive Model of Shape Memory Alloys: One-dimensional Phase Transformation Model**

TADASHIGE IKEDA, Nagoya University, Nagoya, Japan

16.30 Coffee Break

Chair: A. SCHÖNECKER, Fraunhofer IKTS, Dresden, Germany

17.00 *C-1: L19* **Damping by SMA in Civil Engineering Structures**

F. MARTORELL, V. TORRA, A. ISALGUE, M.LL. PEREA, Polytechnic University of Catalonia, Barcelona, Catalonia, Spain; P. TERRIAULT, Université du Québec, Montreal, Québec, Canada; F.C. LOVEY, Centro Atómico Bariloche e Instituto Balseiro, S.C. de Bariloche, Argentina

17.20 *C-1: L20* **Precision Motion Control of a Smart Structure using an Enhanced Stick-slip Model**

MIN-GYU JANG, CHUL-HEE LEE, SEUNG-BOK CHOI, Inha University, Incheon, Korea

17.40 *C-1: L21* **Investigation of Functional Properties of Lead-Zirconate-Titanate Ceramics Under Combined Electro-mechanical Load**

M. NICOLAI, A. SCHÖNECKER, Fraunhofer IKTS, Dresden, Germany

TUESDAY JUNE 10 AFTERNOON

Session C-2 - Integration Technologies

Room: MANFREDI B

Chair: A. KIREMIDJIAN, Stanford University, Stanford, CA, USA

- 14.40 *C-2: L07* **Control of Vibratory Energy Harvesting Systems with Optimized Passive Networks**
J. SCRUGGS, Duke University, Durham, NC, USA
- 15.00 *C-2: L08* **Integration of Piezoceramic Modules into Die Castings - Procedure and Functionalities**
M. RÜBNER, C. KÖRNER, R.F. SINGER, University of Erlangen, Germany
- 15.20 *C-2: L09* **Performance Characteristics of a Jetting Dispenser Featuring Piezostack and Flexible Beam Mechanism**
QUOC HUNG NGUYEN, SEUNG-BOK CHOI, CHUL-HEE LEE, Inha University, Incheon, Korea
- 15.40 *C-2: L10* **Adaptive Control of Nonlinear Structures Using RBF Networks**
S. NARASIMHAN, University of Waterloo, Waterloo, Ontario, Canada
- 16.00 *C-2: L11* **Control Algorithms for Semi-active Structural Systems: Do they Really Matter?**
A. OCCHIUZZI, Università degli Studi "Parthenope", Napoli, Italy
- 16.20 *C-2: L12* **Model Development and Control Design of Smart Functionally Graded Structures**
D. MARINOVA, Technical University - Sofia, Sofia, Bulgaria
- 16.40 Coffee Break

Session C-4 - Structural Monitoring

Room: MANFREDI B

Chair: S. NAGARAJIAH, Rice University, Houston, TX, USA

- 17.10 *C-4: IL01* **A Reference-free Paradigm for Structural Health Monitoring**
HOON SOHN, KAIST, Daejeon, South Korea
- 17.40 *C-4: IL02* **Vibration-based Structural Health Monitoring - Current Status and Future Perspectives**
C.-P. FRITZEN, University of Siegen, Siegen, Germany
- 18.10 *C-4: IL13* **On the Development of Efficient Damage Diagnosis Algorithms for Local Sensor-level Processing**
A. KIREMIDJIAN, K. NAIR, A. CHEUNG, H. NOH, Stanford University, Stanford, CA, USA

Session D-2 - Enabling Tools

Room: RINALDO C

Chair: R. WECHSUNG, Microparts GmbH, Dortmund, Germany

14.50 *D-2: IL05* **Polymer-biological Tissue Adhesion - A Conceptual Study**

AKIO KISHIDA, T. KIMURA, K. SHIBA, K. YAMAMOTO, Tokyo Medical and Dental University, Tokyo, Japan; A. KATO, T. MASUZAWA, Ibaraki University, Ibaraki, Japan; T. HIGAMI, Sapporo Medical University, Hokkaido, Japan

15.20 *D-2: L06* **The Effect of Magnetic Field on Magnetotactic Bacteria Behaviors**

HIDEHARU TAKAHASHI¹, H. KIKURA¹, T. IWASA², S. WATANABE², M. ARITOMI¹, ¹Tokyo Institute of Technology, Tokyo, Japan; ²Muroran Institute of Technology, Muroran, Japan

15.40 *D-2: L07* **Low Voltage Microgripper for Single Cell Manipulation**

B. SOLANO, D. WOOD, Durham University, Durham, UK

16.00 *D-2: L08* **A New Force Controlled Liquid Injection System for Biomedical Applications**

M. GABI, ETH Zürich, Zürich, Switzerland; J. POLESEL-MARIS, A. MEISTER, M. LILEY, H. HEINZELMANN, Swiss Center for Electronics and Microtechnology CSEM, Neuchâtel, Switzerland; J. VÖRÖS, T. ZAMBELLI, ETH, Zürich, Switzerland

16.20 *D-2: L09* **Simulation of water flow in a coated nano pore by a molecular dynamics**

KEISUKE YAMAMOTO, T. IWATUBO, K. SAITOU, T. MORIUCHI, Kansai University, Suita-shi, Osaka, Japan

16.40 Coffee Break

Chair: AKIO KISHIDA, Tokyo Medical & Dental University, Tokyo, Japan

17.10 *D-2: IL10* **Biochemical Sensors Based on Specific Adsorption of Oligonucleotides**

M.R. BEGLEY, M. UTZ, J. LANDERS, E. SEKER, LING HUANG, University of Virginia, Charlottesville, VA, USA

17.40 *D-2: L11* **Field-effect Controlled Single-walled Carbon Nanotube Devices for Biomedical Sensor Applications**

U. SCHWALKE, Darmstadt University of Technology, Darmstadt, Germany

18.00 *D-2: IL12* **Multimodal on Body Sensing for Health Care Application**

P. LUKOWICZ, University of Passau, Passau, Germany

Session E-2 - Biomimetic Materials

Room: RINALDO A

E-2.1 Bio-inspired and Bio-enabled Materials

Chair: DI ZHANG, Shanghai Jiaotong University, Shanghai, China

- 15.00 *E-2.1: IL01* **Two-dimensional Crystallization of Proteins on Lipid Surfaces**
A.R. BRISSON, N. ARRAUD, R. BERAT, A. BOUTER, B. GARNIER, C. GOUNOU, J. LAI-KEE-HIM, S. TAN, University of Bordeaux, Talence, France
- 15.30 *E-2.1: L02* **Nonlinear Self-excited Oscillation of a Synthetic Ion Channel-inspired Nano-actuation Membrane**
TAKEO YAMAGUCHI^{1,2}, TAICHI ITO¹, HIDENORI OHASHI², NAOKO MIYAOI², YUMI OGINO², ¹Tokyo Institute of Technology, Yokohama, Japan; ²University of Tokyo, Tokyo, Japan
- 15.50 *E-2.1: L03* **Fractals to Model Hierarchical Biomaterials**
A. CARPINTERI, N. PUGNO, A. SAPORA, Politecnico di Torino, Torino, Italy
- 16.10 *E-2.1: L05* **Synthetic Biology: Olfactory Receptors in Artificial Membranes**
R. ROBELEK¹, E. LEMKER³, B. WILTSCHI³, V. KIRSTE¹, T. LASSER², M. LEUTENEGGER², D. OESTERHELT³, E. SINNER¹, ¹Max-Planck-Institute for Polymer Research, Mainz, Germany; ²EPFL, Lausanne, Switzerland; ³Max-Planck-Institute for Biochemistry, Martinsried, Germany
- 16.30 *Coffee Break*

Session E-1 - Algorithms, Mechanisms and Structures in Nature as Inspiration for Mimicking

Room: RINALDO A

E-1.3 Biologically Inspired Structures

Chair: R. TWAROCK, University of York, York, UK

- 17.00 *E-1.3: IL05* **Deployable Structures in Plants**
HIDETOSHI KOBAYASHI, Osaka University, Toyonaka, Japan
- 17.30 *E-1.3: L06* **A Bat-wing Aircraft Using the Smart Joint Mechanism**
E. LEYLEK, J. MANZO, E. GARCIA, Cornell University, Ithaca, NY, USA
- 17.50 *E-1.3: L07* **Analysis and Optimization-based Synthesis of Compliant Mechanisms**
A. HASSE, F.L. CAMPANILE, Empa, Zürich, Switzerland

TUESDAY JUNE 10 AFTERNOON

Session E-6 - Biomimetic Flow Control in Aquatic Systems and its Application to Bioinspired Autonomous Underwater Vehicles

Room: ETNA

Chair: P. CHATELAIN, ETH Zurich, Zurich, Switzerland

15.00 *Welcome by Special Session E-6 Coordinator:*
P. ARENA, Catania University, Catania, Italy

15.10 *E-6: IL02 Vortex Method for the Analysis of Complex, Unsteady and Vortical Flows Around a Swimming Fish*
KYOJI KAMEMOTO, AKIRA OJIMA, Yokohama National University, Yokohama, Japan

15.40 *E-6: IL03 High Fidelity Modeling of the Hydrodynamics of Swimming*
R. MITTAL, The George Washington University, Washington, DC, USA

16.10 *E-6: IL04 Applying Biomechanics to Swim Better*
P.R. BANDYOPADHYAY, Naval Undersea Warfare Center, Newport, Rhode Island, USA

16.40 Coffee Break

Chair: R. MITTAL, The George Washington University, Washington, DC, USA

17.10 *E-6: IL05 Evolutionary Optimization of Anguilliform Swimming*
P. KOUMOUTSAKOS, P. CHATELAIN, ETH Zurich, Zurich, Switzerland

17.40 *E-6: IL06 An Exploration of Passive and Active Flexibility in Biocomotion Through Analysis of Canonical Problems*
J.D. ELDREDGE, University of California, Los Angeles, CA, USA

POSTER DISCUSSION: 18.30 - 19.45

Red Label Posters

Posters whose last number is an even number, i.e. A-5:P12

Session A-5 - Smart Multifunctional Materials and Composites

Room: ORLANDO A

Chair: YASUBUMI FURUYA, Hirosaki University, Hirosaki, Japan

- 9.00 *A-5: IL06* **A New Design Concept for Multifunctional Structural Material Systems Based on Composites**
HIROSHI ASANUMA, Chiba University, Chiba, Japan
- 9.30 *A-5: L07* **Multistable Textured Shell Structures**
A.D. NORMAN, K.A. SEFFEN, S.D. GUEST, University of Cambridge, Cambridge, UK
- 9.50 *A-5: L08* **Friction Coefficients and Wear Rates of MoS₂/Cu, BN/Cu Composites**
TAKASHI HASHIMOTO, H. KOHRI, A. YUMOTO, I. SHIOTA, Kogakuin University, Hachioji, Tokyo, Japan
- 10.10 *A-5: L10* **Development of Stress and Temperature Sensitive Microwires**
A. ZHUKOV^{1, 2}, V. ZHUKOVA^{1, 2}, J. GONZALEZ¹, J.M. BLANCO¹,
¹Universidad del Pais Vasco, San Sebastian, Spain; ²TAMAG Iberica S.L., San Sebastian, Spain
- 10.30 *Coffee Break*

Chair: A.J. BELL, University of Leeds, Leeds, UK

- 11.00 *A-5: IL11* **Development of Smart Composite Actuator/Sensor Material and Device using the Multi-ferroic Effect**
YASUBUMI FURUYA, TEIKO OKAZAKI, Hirosaki University, Japan
- 11.30 *A-5: L12* **Fabrication of Electrode for Thermoelectric Oxide Materials**
H. KOHRI, I. SHIOTA, Kogakuin University, Hachioji, Tokyo, Japan;
M. KATO, I.J. OHSUGI, Salesian Polytechnic, Machida, Tokyo, Japan
- 11.50 *A-5: L13* **Electromechanical Response of Piezoelectric Composite Materials**
T.A. VENKATESH, Stony Brook University, Stony Brook, NY, USA
- 12.10 *A-5: L13B* **Interrelated Electrical and Optical Properties of Gold-Decorated Single Wall Carbon Nanotube (SWCNT) Hybrid Composites**
I.N. IVANOV¹, J.D. HUNT², M. GARRETT², R. GERHARDT³, KAI XIAO¹, BIN ZHAO¹, A. PURETZKY¹, D. STYERS-BARNETT¹, D.B. GEOHEGAN¹, ¹Center for Nanophase Material Sciences, Oak Ridge National Laboratory; Oak Ridge, TN, USA; ²University of Tennessee, Knoxville, TN, USA; ³Georgia Institute of Technology, Atlanta, GA, USA

Session A-8 - MEMS / NEMS

Room: **ORLANDO B**

Chair: A.J. WALTON, University of Edinburgh, Edinburgh, UK

- 9.30 *A-8: IL01 CNT Based Sensors*
C. HIEROLD, A. JUNGEN, L. DURRER, T. HELBLING, ETH Zurich, Zurich, Switzerland
- 10.00 *A-8: L02 Design and Fabrication of a Piezoelectric MEMS AC Current Sensor*
E.S. LELAND, PK. WRIGHT, R.M. WHITE, University of California, Berkeley, CA, USA
- 10.20 *A-8: IL03 MEMS Fabrication Based on Epitaxial Piezoelectric Thin Films on Silicon*
S. GARIGLIO, N. STUCKI, J.-M. TRISCONI, University of Geneva, Switzerland; D. ISARAKORN, D. BRIAND, N.F. DE ROOIJ, University of Neuchatel, Switzerland; S.H. BAEK, C.-B. EOM, University of Wisconsin, Madison, USA; J.W. Reiner, C.H. AHN, Yale University, USA
- 10.50 *A-8: L04 Model and Simulation of Resonant MEMS Based on High-electron Mobility Transistor*
I. KHYROVA, University of Aizu, Aizu-Wakamatsu City, Japan
- 11.10 *Coffee Break*
- Chair:* C. HIEROLD, ETH Zurich, Zurich, Switzerland
- 11.40 *A-8: IL05 A Review of Test Structures for Characterising Microelectronic and MEMS Technology*
A.J. WALTON, S. SMITH, University of Edinburgh, Edinburgh, UK
- 12.10 *A-8: L06 Friction Drive Simulation of a SAW Motor with Slider Surface Texture Variation*
MINORU KURIBAYASHI KUROSAWA, TAKASHI SHIGEMATSU, Tokyo Institute of Technology, Yokohama, Japan
- 12.30 *A-8: L07 MEMS Rotational Thermal Actuator for High Force and Large Displacement*
L.J. CURRANO, D. GEE, W. CHURAMAN, M. DUBEY, P. AMIRTHARAJ, U.S. Army Research Lab., Adelphi, MD, USA; M. YU, B. BALACHANDRAN, University of Maryland, College Park, MD, USA

**Session A-10.2 - Phase Transformation and
Microstructure**

Room: **RINALDO B**

Chair: P. SITTNER, Institute of Physics of the ASCR v.v.i., Prague, Czech Republic

- 9.10 *A-10.2: IL06* **Rearrangement of Crystallographic Domains Driven by Magnetic Field in Ferromagnetic Shape Memory Alloy and Antiferromagnetic Oxide**
TOMOYUKI KAKESHITA, Osaka University, Suita, Japan
- 9.40 *A-10.2: IL07* **Texture Development in Ni-Ti Thin Films**
F.M. BRAZ FERNANDES, R.M.S. MARTINS, N. SCHELL*, K.K. MAHESH, R.J.C. SILVA, CENIMAT, Monte de Caparica, Portugal;
*GKSS, Geesthacht, Germany
- 10.10 *A-10.2: L08* **In-situ Studies of Ferroelastic Domain Textures in NiTi Shape Memory Alloys under Load**
W.W. SCHMAHL, M. HASAN, C. MERKEL, LMU Munich, Germany;
M. HÖLZEL, FRM-II, Munich and TU Darmstadt, Germany;
J. FRENZEL, S. GOLLERTHAN, M. WAGNER, G. EGGELER, Ruhr-University Bochum, Germany
- 10.30 *A-10.2: L10* **A Study on Phase Transformation in NiTi Shape Memory Alloy Films Deposited Using Heated Target**
K.P. MOHANCHANDRA, G.P. CARMAN, University of California, Los Angeles, CA, USA

10.50 *Coffee Break*

Chair: F.M. BRAZ FERNANDES, CENIMAT, Monte de Caparica, Portugal

- 11.20 *A-10.2: IL11* **Instability of the B2-type Structure and Second Order-like Incommensurate-commensurate Transformation in Iron-doped Ti-Ni Alloys**
TAKASHI FUKUDA, TOMOYUKI KAKESHITA, Osaka University, Suita, Japan
- 11.50 *A-10.2: IL12* **Two-way Memory Effect in NiTi Shape Memory Alloys**
YONG LIU, Nanyang Technological University, Singapore
- 12.20 *A-10.2: IL13* **Magneto-microstructural Characterization of Magnetic Shape Memory Alloys**
H.J. MAIER, D. NIKLASCH, University of Paderborn, Paderborn, Germany; I. KARAMAN, Texas A&M University, College Station, TX, USA

Session A-11.3 - Functionality and Applications

Room: **BELLINI**

Chair: H. MEINANDER, Tampere University of Technology, Tampere, Finland

- 9.00 *A-11.3: IL01* **Fiber Sensory Bioengineering**
YI LI, The Hong Kong Polytechnic University, Kowloon, Hong Kong
- 9.30 *A-11.3: IL02* **E-textiles Applications in Emergency Scenarios**
R. PARADISO, Smartex Srl, Prato, Italy
- 10.00 *A-11.3: L03* **Person Detection with Nanomaterial-based Rubber Foam for Cars and E-homes**
U. HERBERTH, Ingenieurbuero Herberth, Endingen, Germany
- 10.20 *A-11.3: L04* **Photo-catalysis of Red Wine Stains using Titanium Dioxide Sol-gel Coatings on Wool Fabrics**
C.J. HURREN, P.G. COOKSON, X.G. WANG, Deakin University, Geelong, Vic, Australia
- 10.40 *A-11.3: L05* **Modification of Cotton to Improve its Water Repellency and Thermal Stability**
C. PISUNTORNUSUG, N. YANUMET, Chulalongkorn University, Bangkok, Thailand; E.A. O'REAR, The University of Oklahoma, Norman, OK, USA
- 11.00 *A-11.3: L05B* **Optimization of the Electrospray Process by PIV Analysis in Nanostructured Membranes Preparation**
D. PLISZKA¹, S. SUNDARRAJAN¹, A. JAWOREK², A. KRUPA², M. LACKOWSKI², S. RAMAKRISHNA¹, ¹National University of Singapore, Singapore; ²Polish Academy of Sciences, Gdansk, Poland
- 11.20 *Coffee Break*

Chair: R. PARADISO, Smartex Srl, Prato, Italy

- 11.50 *A-11.3: IL06* **Haptic Sensing in Intelligent Textile Development**
H. MEINANDER, Tampere University of Technology, Tampere, Finland
- 12.20 *A-11.3: L07* **Carbon-based Textiles as Gas Diffusion Layers (GDL) for Polymer Fuel Cells**
P. GALLO STAMPINO, D. BRIVIO, G. DOTELLI, Politecnico di Milano, Milano, Italy; P. FRACAS, Saati Group Spa, Appiano Gentile, Como, Italy; P. GRASSINI, 3SEAL SpA, Legnano, Milano, Italy
- 12.40 *A-11.3: L08* **Enzymatic Functionalisation of Proteinous and Chitosan Fibres with BioPhenolics and their Bioactive Properties**
F. SOUSA¹, S. JUS^{1,2}, G.M. GUEBITZ², V. KOKOL¹, ¹University of Maribor, Slovenia; ²Graz University of Technology, Austria

Session A-12.2 - Analysis, Physical Mechanisms and Characterization

Room: **ETNA**

Chair: KWANG J. KIM, University of Nevada, Reno, USA

- 9.00 *A-12.2: IL01* **Finite-elasticity Models of Actuation**
G. KOFOD, University of Potsdam, Potsdam, Germany
- 9.30 *A-12.2: IL02* **Models for High-strain Deformation of Dielectric Elastomer Actuators**
R.M. McMEEKING, S.M.A. JIMENEZ, University of California, Santa Barbara, CA, USA
- 10.00 *A-12.2: L03* **A Model for a Thermally Induced Polymer Coil-to-globule Transition**
I.C. SANCHEZ, D. SIMMONS, University of Texas, Austin, TX, USA
- 10.20 *A-12.2: L04* **Monte Carlo Simulation of Electroactive Polymer Actuators**
KENJI KIYOHARA, KINJI ASAKA, AIST, Ikeda, Osaka, Japan
- 10.40 *A-12.2: L05* **Dielectric Elastomer Actuators as Elements of Active Vibration Control Systems**
F.G. PAPASPIRIDIS, I.A. ANTONIADIS, National Technical University of Athens, Athens, Greece
- 11.00 *Coffee Break*

Session A-12.1 - Materials

Room: **ETNA**

Chair: G. KOFOD, University of Potsdam, Potsdam, Germany

- 11.30 *A-12.1: IL14* **Ionic Polymer-metal Composite Paint**
KWANG J. KIM, IL-SEOK PARK, University of Nevada, Reno, NV, USA
- 12.00 *A-12.1: IL15* **Electromechanical Actuation of Carbon Nanotube Yarns**
T. MIRFAKHRAI¹, JIYOUNG OH², M. KOZLOV², S. FANG², M. ZHANG², R.H. BAUGHMAN², G. ALICI³, G. SPINKS³, J.D MADDEN¹,
¹University of British Columbia, Vancouver, Canada; ²University of Texas at Dallas, Richardson, TX, USA; ³University of Wollongong, NSW, Australia
- 12.30 *A-12.1: L16* **Electrode Reactions in Cu-Pt Coated Nafion® Actuators**
U. JOHANSON, U. MÄEORG, D. BRANDELL, A. PUNNING, M. KRUUSMAA, A. AABLOO, Tartu University, Tartu, Estonia

Session B-1 - Smart Optical Materials

Room: ORLANDO C

B-1.4 Metamaterials, Composite and Hybrid Materials

Chair: R. MAGNUSSON, University of Connecticut, Storrs, CT, USA

- 9.00 ***B-1.4: IL01 Low Dimensional Composite Nanomaterials: Theory and Applications***
A. QUANDT, University of Greifswald, Greifswald, Germany
- 9.30 ***B-1.4: IL02 Planar Photonic Metamaterials***
N. ZHELUDEV, University of Southampton, Southampton, UK
- 10.00 ***B-1.4: IL03 Quantum-dot / Dendrimer Based FRET Structured Functional Nanotubes for Sensitive Studies of DNA Hybridization***
CHUAN LIANG FENG¹, XIN HUA ZHONG², M. STEINHART³, A.-M. CAMINADE⁴, J.P. MAJORAL⁴, W. KNOLL¹, ¹Max Planck Institute for Polymer Research, Mainz, Germany; ²East China University of Science & Technology, Shanghai, P. R. China; ³Max Planck Institute of Microstructure Physics, Halle, Germany; ⁴Centre National de la Recherche Scientifique, Toulouse Cedex, France
- 10.30 ***B-1.4: IL04 Holographic Techniques to Study the Light Induced Diffusion of the Photosensitive Metal Alcoholates***
P.W. OLIVEIRA, P. KÖNIG, M. VEITH, Leibniz-Institut für Neue Materialien, Saarbrücken, Germany
- 11.00 Coffee Break

B-1.5 Photonic Crystal Structures and Microstructured Fibers

Chair: M. IVANDA, Rudjer Boskovic Institute, Zagreb, Croatia

- 11.30 ***B-1.5: IL01 Negative Refraction in Photonic Crystals***
TOSHIHIKO BABA, TOMOHIKO ASATSUMA, TAKASHI MATSUMOTO, Yokohama National University, Yokohama, Japan
- 12.00 ***B-1.5: IL02 Properties of Nanostructured Resonant Leaky-mode Photonic Devices***
R. MAGNUSSON, University of Connecticut, Storrs, CT, USA

Session C-3 - Smart Structures and Integrated Systems

Room: **MANFREDI A**

Chair: A. DEL GROSSO, Genoa University, Genoa, Italy

- 9.00 **C-3: L09 On Behavior of Multi-layered Bases-foundations and Seismoisolators**
L.A. AGHALOVYAN, R.ZH. HOVHANNISYAN, Inst. of Mechanics, National Academy of Sciences of Armenia, Yerevan, Armenia
- 9.20 **C-3: L10 Fault Tolerant Neural Controller for Seismically Excited Smart Structures Experiencing Online Failure**
M. CONTRERAS¹, S. NARASIMHAN², S. NAGARAJAIAH¹, ¹Rice University, Houston, TX, USA; ²University of Waterloo, Waterloo, Ontario, Canada
- 9.40 **C-3: L11 Optimal Placement of Smart MFC Actuators for Vibration Control of Cylindrical Shell Structure**
JUNG WOO SOHN, SEUNG-BOK CHOI, Inha University, Incheon, Korea
- 10.00 **C-3: L12 Mitigation of Wind-induced Vibration with Liquid Column Vibration Absorber**
HONGJIN KIM, W. KIM, Kyungpook National University, Daegu, Korea; S.-G. LEE, Chonnam National University, Gwangju, Korea; J.-S. CHO, D. KIM, K.-J. LEE, POSCOENC, Seoul, Korea
- 10.20 **C-3: L13 Fundamental Study on Simple Quantitative Approach of Damping Performance for Variable Hydraulic Damper**
TAKESHI HIWATASHI, Toa Corporation, Yokohama, Japan; HIDEO FUJITANI, Kobe University, Kobe, Japan
- 10.40 **C-3: L14 Experimental Assessment of Structural Control Devices Used to Protect Civil Buildings**
G. MAGONETTE, EC - Joint Research Centre, Ispra, Italy
- 11.00 *Coffee Break*

Chair: M.P. SINGH, Virginia Tech, Blacksburg, VA, USA

- 11.30 **C-3: IL15 Current Directions of Structural Control and Monitoring in USA**
S. NAGARAJAIAH, Rice University, Houston, TX, USA
- 12.00 **C-3: IL16 Examples of Future Potential Smart Civil Structures**
A.E. DEL GROSSO, University of Genoa, Genoa, Italy

Session C-4 - Structural Monitoring

Room: **MANFREDI B**

Chair: L. FARAVELLI, Pavia University, Pavia, Italy

- 9.00 *C-4: IL03* **Quantifying Performance of SHM**
FU-KUO CHANG, Stanford University, Stanford, CA, USA
- 9.30 *C-4: IL04* **Limits of Elliptical Triangulation Algorithm for Structural Health and Usage Monitoring of Aeronautical Structures**
C. PAGET, Airbus, Bristol, UK
- 10.00 *C-4: IL05* **SHM System Integration and Supporting Algorithms**
AKIRA MITA, Keio University, Yokohama, Japan
- 10.30 *Coffee Break*

Chair: C. PAGET, Airbus, Bristol, UK

- 11.00 *C-4: IL06* **Piezoelectric Impedance Sensor-based Structural Health Monitoring for Critical Members of Civil Infrastructures**
CHUNG-BANG YUN, SEUNGHEE PARK, KAIST, Daejeon, Korea
- 11.30 *C-4: L07* **Damage Detection with Auxiliary Subsystems**
F. VESTRONI, S. VIDOLI, F. DELL'ISOLA, J. CIAMBELLA, Università di Roma "La Sapienza", Roma, Italy
- 11.50 *C-4: L08* **Development of a Structural Health Monitoring System for Guangzhou New TV Tower**
Y.Q. NI, Y. XIA, W.Y. LIAO, P. ZHANG, The Hong Kong Polytechnic University, Kowloon, Hong Kong
- 12.10 *C-4: L11* **Smart Nonlinear Acoustic Based Structural Health Monitoring System**
M. MEO, U. POLIMERO, The University of Bath, Bath, UK

Session D-3 - Medical Diagnostic Applications

Room: RINALDO C

Chair: V. LABHASETWAR, Cleveland Clinic Foundation, Cleveland, OH, USA

10.00 *D-3: IL01* **DNA-based Transistor**
YUJI MIYAHARA, National Institute for Materials Science, and The University of Tokyo, Tokyo, Japan

10.30 *D-3: IL03* **Biocompatible Nanoparticles-based QDs for In-vivo Imaging**
M.G. SANDROS, M. BEHRENDT, D. MAYSINGER, M. TABRIZIAN, McGill University, Montreal, Canada

11.00 *Coffee Break*

Chair: J. LUPRANO, Centre Suisse d'Electronique et de Microtechnique, Neuchatel, Switzerland

11.30 *D-3: IL04* **Wearable Biosensors for Monitoring Wound Healing**
S. PASCHE, S. ANGELONI, R. ISCHER, M. LILEY, J. LUPRANO, G. VOIRIN, Centre Suisse d'Electronique et de Microtechnique SA, Neuchâtel, Switzerland

12.00 *D-3: IL05* **Wearable Intelligent Systems Achievements, Challenges and Perspectives**
A. LYMBERIS, European Commission, Brussels, Belgium

12.30 *D-3: IL07* **Biocompatibility of Iron-oxide Magnetic Nanoparticles**
V. LABHASETWAR, Cleveland Clinic Foundation, Cleveland, OH, USA

WEDNESDAY JUNE 11 MORNING

Session E-2 - Biomimetic Materials

Room: RINALDO A

E-2.1 Bio-inspired and Bio-enabled Materials

Chair: G.H. POLLACK, University of Washington, Seattle, WA, USA

- 9.00 **E-2.1: IL06 Study on Morph-genetic Materials Derived from Natural Materials**
D. ZHANG, T.X. FAN, L.H. SU, S.M. ZHU, J.J. GU, J. DING, Shanghai Jiaotong University, Shanghai, China
- 9.30 **E-2.1: L07 Functional Surfaces in Biology - Mechanisms and Applications**
S.N. GORB, Max-Planck-Inst. for Metals Research, Stuttgart, Germany
- 9.50 **E-2.1: L08 Design Strategies for Hard Biomaterials in Marine Shells. Examples from the Phylum Brachiopoda**
E. GRIESSHABER, W.W. SCHMAHL, C. MERKEL, A. GÖTZ, Ludwig Maximilian University, Munich, Germany
- 10.10 **E-2.1: L09 New Fabrication Process of Nano-composites by Biomimetic Approach**
MITSUYO OKAMOTO, E. IWAI, H. HATTA, The Institute of Space and Astronautical, Kanagawa, Japan; H. KOHRI, I. SHIOTA, Kogakuin University, Tokyo, Japan
- 10.30 **E-2.1: L10 Gecko-inspired Suit Could Have you Climbing the Wall**
N. PUGNO, Politecnico di Torino, Torino, Italy
- 10.50 *Coffee Break*

Session E-3 - Bio-inspired Sensors and Actuators

Room: RINALDO A

E-3.2 Actuators

Chair: A. OFFENHAUSSER, Forschungsinstitut Juelich, Germany

- 11.20 **E-3.2: IL01 A pH-driven DNA Nanoswitch Array**
DEJIAN ZHOU, University of Leeds, Leeds, UK
- 11.50 **E-3.2: L04 A pH-activated Biomimetic Actuator Derived from McKibben Artificial Muscle Structure**
B. TONDU, R. EMIRKHANIAN, S. MATHÉ, A. RICARD, University of Toulouse, Toulouse, France
- 12.10 **E-3.2: L05 Unraveling Cytoskeletal Transduction during Myogenesis with EAP Bioactuator**
E. THOMASSON, M. ASCHWANDEN, R. ENNING, A. STEMMER, A. FRANCO-OBREGÓN, ETH, Zurich, Switzerland

"Buffet Lunch": 13.00 - 14.45

*15.00 - 20.00
Tour to Taormina
Bus Departure from Congress Center at 15.00*

Session A-5 - Smart Multifunctional Materials and Composites

Room: ORLANDO A

Chair: HIROSHI ASANUMA, Chiba University, Chiba, Japan

- 9.30 *A-5: L14* **Thin-film Multiferroic Nanocomposites in the System $\text{LuMnO}_3\text{-Pr}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$**
O.Yu. GORBENKO, A.R. AKBASHEV, A.R. KAUL, Lomonosov Moscow State University, Moscow, Russia
- 9.50 *A-5: IL15* **Tunable and Self-sensing Microwave Composite Materials Incorporating Ferromagnetic Wires**
D.P. MAKHNOVSKIY, University of Plymouth, Devon, UK
- 10.20 *A-5: L16* **Termoelectric Properties of High Density Sintered $\text{Ca}_3\text{Co}_2\text{O}_6$**
T. UESUGI, H. KOHRI, I. SHIOTA, Kogakuin University, Hachioji, Tokyo, Japan; M. KATO, I.J. OHSUGI, Salesio Polytechnic, Machida, Tokyo, Japan
- 10.40 *A-5: IL18* **Room Temperature Magnetic-semiconductors in Modified Iron Titanates: their Multifunctional Nature and Potential Applications**
R.K. PANDEY, P. PADMINI, P. KALE, J. DOU, R. SCHAD, University of Alabama, Tuscaloosa, AL, USA; R. WILKINS, Prairie View A&M University, Prairie View, TX, USA; W. GEERTS, Texas State University, San Marcos, TX, USA
- 11.00 *Coffee Break*

Session A-8 - MEMS / NEMS

Room: **ORLANDO B**

Chair: MASANORI HAYASE, Tokyo University of Science, Chiba, Japan

9.00 *A-8: IL09* **Anthropod Flow Sensing: when MEMS Design Learns from Physical Ecology**

J. CASAS, Université de Tours, Tours, France; G. KRIJNEN, University of Twente, Enschede, The Netherlands

9.30 *A-8: IL10* **Nanofluidic Membranes and Filters for Biosample Preparation**

PAN MAO, MIT, Cambridge, MA, USA; M. STERN, Lehigh University, Bethlehem, PA, USA; C. BATISTA, Roxbury Community College, Roxbury Crossing, MA, USA; JEONGHOON LEE, YONG-AK SONG, JONGYOON HAN, MIT, Cambridge, MA, USA

10.00 *A-8: IL11* **Electronically Controlled Micro- and Nanosystems for Biosensing and Interfacing Biology**

J. VÖRÖS, ETH Zurich, Zurich, Switzerland

10.30 *Coffee Break*

Chair: JONGYOON HAN, MIT, Cambridge, MA, USA

11.00 *A-8: IL12* **Dynamic Fluidic Microarray for Biological Cell Analysis**

SHOJI TAKEUCHI, The University of Tokyo, Tokyo, Japan

11.30 *A-8: L14* **Design and Fabrication of a Two Hot Arms Thermal Micro-actuator with Integrated Micro Tweezers**

A.B. ALAMIN DOW, University of Bremen, Bremen, Germany; K. IVANOVA, T. IVANOV, I. RANGELOW, Technical University of Ilmenau, Ilmenau, Germany

11.50 *A-8: L15* **Three-axis MEMS Threshold Accelerometer Switch for Enhanced Power Conservation**

W. CHURAMAN, L.J. CURRANO, D. GEE, U.S. Army Research Laboratory, Adelphi, MD, USA

12.10 *A-8: L16* **Piezoelectric MEMS Actuators for Bio-inspired Micro-robotic Applications**

J. PULSKAMP, K. OLDHAM*, R. POLCAWICH, M. DUBEY, P. AMIRTHARAJ, United States Army Research Laboratory, Adelphi, MD, USA; *University of Michigan, Ann Arbor, MI, USA

THURSDAY JUNE 12 MORNING

Session A-10.5 - Applications

Room: RINALDO B

Chair: R.C. O'HANDLEY, MIT, Cambridge, MA, USA

- 9.30 *A-10.5: IL01 SMA Fatigue in Civil Engineering Applications*
F. CASCIATI¹, L. FARAVELLI¹, A. ISALGUE², F. MARTORELL², H. SOUL³, V. TORRA², ¹University of Pavia, Pavia, Italy; ²Polytechnic University of Catalonia, Barcelona, Spain; ³Centro Atomico Bariloche e Instituto Balseiro, S.C. de Bariloche, Argentina
- 10.00 *A-10.5: L03 Control Characteristics of Shape Memory Alloy Actuator Using Resistance Feedback Control Method*
YUJI TAKEDA, TAKE R&D, Kasukabe, Japan; TAKEI YAMAMOTO, TOSHIO SAKUMA, Oita University, Japan
- 10.20 *A-10.5: L05 Generation of Smart Structures on the Basis of in-situ Configuration of Shape Memory Alloys*
S. LANGBEIN, E.G. WELP, Ruhr-University Bochum, Bochum, Germany
- 10.40 *A-10.5: L06 The Mechanical Response of Shape Memory Alloys under a Rapid Heating Pulse*
S. WALLACH, D. SHILO, Technion, Israel
- 11.00 *Coffee Break*

Session A-10.4 - Composites & Coatings

Room: RINALDO B

Chair: V. TORRA, University of Catalonia, Barcelona, Spain

- 11.30 *A-10.4: IL04 Ferro Magnetic Shape Memory Alloy Composites*
R.C. O'HANDLEY^a, R. TECHAPIESANCHAROENKIJ^a, J. FEUCHTWANGER^{a, b}, J. KOSTAMO^{a, c}, B. PETERSON^{a, d}, M. MAHENDRAN^{a, e}, M. RICHARD^{a, f}, S.M. ALLEN^f, ^aMIT, Cambridge, MA, USA; ^bUniversity of Basque Country, Bilbao, Spain; ^cHelsinki University of Technology, Espoo, Finland; ^dNSWC, West Bethesda, MD, USA; ^eThiagarajar College of Engineering, Madurai, India; ^fRichard Stockton College, Pomona, NJ, USA
- 12.00 *A-10.4: L05 Surfactant Modified Nickel-manganese-gallium Powder and Silicone Composites*
R.S. UNDERHILL, K.A. STEVENS, Defence R&D Canada - Atlantic, Dartmouth, Nova Scotia, Canada
- 12.20 *A-10.4: L06 Thermomechanical Modelling and Experimental Testing of a Shape Memory Alloy Hybrid Composite Plate*
F. DAGHIA, University of Bologna, Bologna, Italy; E. SACCO, University of Cassino, Cassino, Italy; G. FAIELLA, University of Naples, Naples, Italy; V. ANTONUCCI, M. GIORDANO, CNR, Naples, Italy

Session A-11.3 - Functionality and Applications

Room: **BELLINI**

Chair: I. LOCHER, SEFAR AG, Heiden, Switzerland

- 9.00 *A-11.3: IL09* **Medical Sensor Applications of Photonic Textiles**
M. ROTHMAIER, M. CAMENZIND, B. SELM, EMPA, St. Gallen, Switzerland
- 9.30 *A-11.3: IL10* **Smart Textile Embedding Optical Fibre Sensors for Healthcare Monitoring during MRI**
F. NARBONNEAU, D. KINET, Multitel, Mons, Belgium; F. PIROTTE, Centexbel, Brussels, Belgium; R. SHISHOO, Shishoo Consulting, Askim, Sweden; J.L. WEBER, Tamtelesanté, Aix en Provence, France; J. DE JONCKHEERE, P. CHAUD, ITM CHRU de Lille, Lille, France; J. WITT, M. SCHUKAR, M. WENDT, N. DANTAN, K. KREBBER, BAM, Kiel, Germany; T. THIEL, AOS, Dresden, Germany; G. KUKA, Fiberware, Mittweida, Germany; S. WEBER, TUM, Munchen, Germany; A. DEPRÉ, Elasta, Kortrijk, Belgium
- 10.00 *A-11.3: IL11* **Position and Motion Sensing for Sport, Entertainment and Rehabilitation**
R.J.N. HELMER, CSIRO Textile and Fibre Technology, Belmont, Vic, Australia
- 10.30 *A-11.3: IL12* **Design for Ageing Well: Improving the Quality of Life for the Aging Population Using a Technology Enabled Garment System**
J. McCANN, University of Wales, Newport, UK
- 11.00 *A-11.3: L13* **Monitoring and Control System of Discomfort in Disability, Bed Rest People and Surgical Patients**
M.A.F. CARVALHO, F.B.N. FERREIRA, H. CARVALHO, J.G. ROCHA, L.B. MARTINS, University of Minho, Guimaraes, Portugal; J.A. SANTOS, University of Minho, Braga, Portugal
- 11.20 *Coffee Break*

THURSDAY JUNE 12 MORNING

Room: **BELLINI**

Chair: F. NARBONNEAU, Multitel ASBL, Mons, Belgium

Session A-11.1 - Adaptive / Active Textiles

- 12.30 *A-11.1: IL03* **Fabrication and Multifunctional Applications of Carbon Nanotube Yarns and Self-woven Transparent Sheets**
R.H. BAUGHMAN, S. FANG, M. ZHANG, A.A. ZAKHIDOV, M. KOZLOV, A.E. ALIEV, University of Texas, Dallas, TX, USA; K.R. ATKINSON, CSIRO Textile & Fibre Technology, Belmont, Victoria, Australia; T. MIRFAKHRAI, J.D.W. MADDEN, University of British Columbia, Vancouver, Canada; P. GALVAN-GARCIA, M.I. ROMERO, Scottish Rite Hospital, Dallas, TX, USA

Session A-11.2 - E-textiles

- 12.20 *A-11.2: L02* **Printed Textile Antennas for Off-body Communication**
C. HERTLEER, L. VAN LANGENHOVE, H. ROGIER, Ghent University, Zwijnaarde (Gent), Belgium
- 12.40 *A-11.2: L03* **A Smarter Life**
M. PEDLEY, D. EMERY, SmartLife Technologies, Manchester, UK; T. DIAS, P. GAYDECKI, University of Manchester, Manchester, UK

Session A-12.2 - Analysis, Physical Mechanisms and Characterization

Room: **ETNA**

Chair: KEIICHI KANETO, Kyushu Institute of Technology, Fukuoka, Japan

- 9.00 *A-12.2: IL06* **Electrochemomechanical Actuators Touching and Sensing both, Physical and Chemical Ambient**
T.F. OTERO, Universidad Politécnica de Cartagena, Cartagena, Spain
- 9.30 *A-12.2: IL07* **Work Behavior of Polypyrrole Artificial Muscles**
KEIICHI KANETO, HIROTAKA SUEMATSU, KENTARO YAMATO, Kyushu Institute of Technology, Kitakyushu, Japan
- 10.00 *A-12.2: L08* **The Coupled Energy - Density Function of Dielectric Composites in Finite Deformation Elasticity**
G. DeBOTTON¹, M. GEI², A. LEWINSTEIN¹, ¹Ben-Gurion University, Beer-Sheva, Israel; ²University of Trento, Trento, Italy
- 10.20 *A-12.2: L09* **Optimization of IPMC Actuators Conversion Efficiency**
P. BRUNETTO, L. FORTUNA, P. GIANNONE, S. GRAZIANI, S. STRAZZERI, Università degli Studi di Catania, Catania, Italy
- 10.40 *A-12.2: L10* **Tuneable Membrane for Electromagnetic Devices Using Dielectric Elastomers**
C. BOLZMACHER, K. BAUER, EADS Innovation Works, Munich, Germany; M. HAFEZ, Commissariat à l'Energie Atomique, Fontenay aux Roses, France; H. SEIDEL, U. SCHMID, Saarland University, Saarbrücken, Germany
- 11.00 *Coffee Break*
- Chair:* T.F. OTERO, Universidad Politécnica de Cartagena, Cartagena, Spain
- 11.30 *A-12.2: IL11* **Synthesis and Characterization of Electrothermally Sensitive Gels**
K.-F. ARNDT, A. RICHTER, S. KLATT, G. PASCHEW, Technical University of Dresden, Dresden, Germany
- 12.00 *A-12.2: IL12* **Distributed Impedance Model of Ionic Polymer-metal Composite Actuators**
KENTARO TAKAGI, KINJI ASAKA, GOU NISHIDA, YOSHIHIRO NAKABO, ZHI-WEI LUO, RIKEN, Nagoya, Japan
- 12.30 *A-12.2: L13* **A Distributed Electromechanical Model of Ionomeric Polymer Metal Composite (IPMC)**
A. PUNNING, U. JOHANSON, M. ANTON, M. KRUUSMAA, A. AABLOO, University of Tartu, Tartu, Estonia

THURSDAY JUNE 12 MORNING

Session B-1 - Smart Optical Materials

Room: ORLANDO C

B-1.5 Photonic Crystal Structures and Microstructured Fibers

Chair: A. CUTOLO, Università del Sannio, Benevento, Italy

- 9.30 ***B-1.5: IL04* Developing Single-mode Tellurite Glass Holey Fiber for Infrared Nonlinear Applications**
XIAN FENG, J.C. FLANAGAN, K.E. FRAMPTON, P. PETROPOULOS, J.H.V. PRICE, N.M. WHITE, W.H. LOH, H.N. RUTT, D.J. RICHARDSON, University of Southampton, Southampton, UK
- 10.00 ***B-1.5: IL05* Fabrication and Characterization of Silica Opals**
C. ARMELLINI, A. CHIAPPINI, A. CHIASERA, M. FERRARI, Y. JESTIN, CNR-IFN, Povo-Trento, Italy; E. MOSER, University of Trento, Povo-Trento, Italy; R. RETOUX, CRISMAT, ENSICAEN, Caen, France; G. SPERANZA, L. MINATI, FBK-IRST, Povo, Italy; G. NUNZI CONTI, Centro Fermi, Roma, Italy; S. BERNESCHI, I. CACCIARI, S. PELLI, IFAC - CNR, Sesto Fiorentino, Italy; G.C. RIGHINI, CNR, Rome, and IFAC - CNR, Sesto Fiorentino, Italy
- 10.30 ***B-1.5: L06* Low Frequency Coherent Raman Scattering of Spherical Acoustical Vibrations of Self-organized Three-dimensional Germanium Nanocrystals**
M. IVANDA, M. BULJAN, U.V. DESNICA, D. RISTIC, Rudjer Boskovic Institute, Zagreb, Croatia; M. FERRARI, Istituto di Fotonica e Nanotecnologie, Trento, Italy; G.C. RIGHINI, IFAC - CNR, Firenze, Italy
- 10.50 Coffee Break

Session B-2 - Passive, Active and Adaptive Optical Devices & Systems

Room: ORLANDO C

B-2.1 Optical MEMS, Smart Optical Sensors and Devices

Chair: XIAN FENG, University of Southampton, Southampton, UK

- 11.20 ***B-2.1: IL01* Nanowire Superconducting Single-photon Detectors**
R.H. HADFIELD, Heriot-Watt University, Edinburgh, UK; SAE WOO NAM, M.J. STEVENS, R.P. MIRIN, National Institute of Standards and Technology, Boulder, CO, USA
- 11.50 ***B-2.1: IL02* Elucidation of Interaction of SiO₂ Glass with F₂ Excimer Laser and Development of Optical Fibers for Deep UV**
HIDEO HOSONO, KOICHI KAJIHARA, Tokyo Institute of Technology, Yokohama, Japan
- 12.20 ***B-2.1: IL03* Fiber-Bragg-grating Sensors and Sensor Arrays**
H. BARTELT, Institute of Photonic Technology, Jena, Germany

THURSDAY JUNE 12 MORNING

Session C-3 - Smart Structures and Integrated Systems

Room: MANFREDI A

Chair: U. GABBERT, University of Magdeburg, Magdeburg, Germany

- 9.40 *C-3: L18* **Chemical Monitoring of Composite Matrices by Evanescent Wave Spectroscopy**
P.B.S. BAILEY, S.A. HAYES, R.J. HAND, B. ZHANG, University of Sheffield, Sheffield, UK
- 10.00 *C-3: L19* **Robustness Improvement of Modal Active Control on On-board Electronic Boards Using Inline Identification Method**
B. CHOMETTE, D. REMOND, S. CHESNE, L. GAUDILLER, INSA-Lyon, Villeurbanne, France
- 10.20 *C-3: L20* **An Experimental Study on the Use of Active Constrained Layer Damping for Thin Curved Smart Shell Structures**
P. SAINI, A. PANDHI, A.K. DARPE, Indian Institute of Technology Delhi, New Delhi, India
- 10.40 *C-3: L21* **Verification of Robustness in Smart Composite Structures**
N. KIPNIS, R. TKACH, E. SHPITZER, D. KIPNIS, Rafael, Hasolelim, Israel
- 11.00 *Coffee Break*

Chair: A. GUEMES, Universidad Politecnica de Madrid, Madrid, Spain

- 11.30 *C-3: IL23* **Holistic Design of Smart Piezoelectric Composite Structures**
U. GABBERT, University of Magdeburg, Magdeburg, Germany
- 12.00 *C-3: IL24* **Control of Properties of Composite Structures with the Use of Multi-functional Materials**
W.M. OSTACHOWICZ, Polish Academy of Sciences, Gdansk, Poland

Session C-5 - Ongoing and Perspective Applications

Room: **MANFREDI B**

Chair: F-K. CHANG, Stanford University, Stanford, CA, USA

- 9.00 *C-5: IL01* **Biosensing & Bioactuation: A New Research Frontier**
SHIH-CHI LIU, G. YANG, National Science Foundation, Arlington, VA, USA
- 9.30 *C-5: IL02* **Biologically Inspired Shape Changing Aerodynamic Profiles and their Effect on Flight Performance of Future Aircraft**
C. BOLLER, CHEN-MING KUO, NING QIN, The University of Sheffield, Sheffield, UK
- 10.00 *C-5: IL03* **Multifunctional and Smart Materials Research at the U.S. Army Research Laboratory**
E.D. WETZEL, U.S. Army Research Laboratory, Aberdeen Proving Ground, MD, USA
- 10.30 *Coffee Break*

Chair: J. RODELLAR, Universidad Politécnic de Catalunya, Barcelona, Spain

- 11.00 *C-5: L05* **Innovations in Smart Materials and Integrated Structural Health Monitoring in the Australian Defence Force**
M.E. IBRAHIM, C.M. SCALA, Defence Science and Technology Organisation, Fishermans Bend, Victoria, Australia
- 11.20 *C-5: L06* **Vibration Damage Reduction of On-board Electronic Boards Using Modal Active Control**
B. CHOMETTE, S. CHESNE, D. REMOND, L. GAUDILLER, INSA-Lyon, Villeurbanne, France
- 11.40 *C-5: L07* **Monitoring Data for the Structural Assessment of Historical Buildings**
S. CASCIATI¹, S. FLORIDIA², N. IMPOLLONIA¹, E. REALE³,
¹University of Catania at Siracusa, Italy; ²Consulting Engineer, Siracusa, Italy; ³Consulting Architect, Siracusa, Italy
- 12.00 *C-5: IL08* **Protection of Mediterranean Historical Structures Against Earthquakes Using Fragility Curves**
C.A. SYRMAKEZIS, National Technical University of Athens, Athens, Greece
- 12.30 *C-5: L12* **Dynamic Material Application in Architectural Environments**
C. LELIEVELD, L. VOORBIJ, W. POELMAN, TU Delft, Delft, The Netherlands

Session D-5 - New Therapeutics and Intelligent Delivery Systems

Room: RINALDO C

Chair: V. TORCHILIN, Northeastern University, Boston, MA, USA

- 9.30 *D-5: IL02 Multifunctional Envelope Type Nano Device for Non-viral Gene Delivery: Concept and Application for Nanomedicine*
HIDEYOSHI HARASHIMA, Hokkaido University, Sapporo, Japan
- 10.00 *D-5: L03 A new Drug Vehicle for Pulmonary Application - Lipid Coated Biodegradable Nanoparticles*
J. SCHÄFER, J. SITTERBERG, U. BAKOWSKY, Philipps University of Marburg, Marburg, Germany
- 10.20 *D-5: L04 Base Invaders. Coupling Experiments and Multiscale Modeling of Dendrimer-Based siRNA Delivery Agents*
S. PRICL, P. POSOCCO, M. FERMEGLIA, University of Trieste, Trieste, Italy; G. SCOCCHI, A. DANANI, ICIMSI-SUPSI, Manno, Switzerland; C. CATAPANO, Iosi, Bellinzona, Switzerland; M. MALY, Academy of Sciences of the Czech Republic, Prague, The Czech Republic; J.-W. HANDGRAAF, H.J.G.E.M. FRAAIJE, Culgi B.V. and University of Leiden, Leiden, The Netherlands
- 10.40 Coffee Break

Session D-4 - Regenerative Medicine and Tissue Engineering

Room: RINALDO C

Chair: HIDEYOSHI HARASHIMA, Hokkaido University, Sapporo, Japan

- 11.10 *D-4: IL02 Analysis of Material for Corneal Cell Therapy*
G. PELLEGRINI, University of Modena and Reggio Emilia, Modena, Italy; J. TORBET, CNRS, Lyon, France; V. HASIRCI, METU, Ankara, Turkey
- 11.40 *D-4: IL03 Novel Nitrogen Rich Plasma Polymers and Chitosan for Tissue Engineering of Intervertebral Discs*
F. MWALE, McGill University, and Lady Davis Institute for Medical Research, Montreal, Quebec, Canada
- 12.10 *D-4: L05 Tissue Engineering Technology to Realize Regenerative Medical Therapy*
YASUHIKO TABATA, Kyoto University, Kyoto, Japan
- 12.30 *D-4: L06 Electrospun Nanofibre Membranes as Wound Dressing Materials*
XIN LIU, T. LIN, J. FANG, X. WANG, Deakin University, Geelong, Vic, Australia

Session E-4 - Biologically Inspired Systems, and Robotics

Room: RINALDO A

E-4.2 Robotics

Chair: SHIGERU SUNADA, Osaka Prefecture University, Osaka, Japan

- 10.00 *E-4.2: IL03* **Neuromimetic Robots Inspired by Insects' Visuomotor Control Systems**
N. FRANCESCHINI, S. VIOLLET, F. RUFFIER, J. SERRES, CNRS & University of the Mediterranean, Marseille, France
- 10.30 *E-4.2: L04* **CPG Control of a Tensegrity Structure**
T.K. BLISS, T. IWASAKI, H. BART-SMITH, University of Virginia, Charlottesville, VA, USA
- 10.50 *E-4.2: IL05* **Hybrid Structures Composed of Photosynthetic System and Metal Nanoparticles: Plasmon Enhancement Effect**
A.O. GOVOROV, Ohio University, Athens, OH, USA

11.20 Coffee Break

E-4.3 Micro and Nano Systems

Chair: F.C. SIMMEL, Technical University Munich, Garching, Germany

- 11.50 *E-4.3: IL01* **Structural DNA Nanotechnology: Robots and Arrays**
N.C. SEEMAN, New York University, New York, NY, USA
- 12.20 *E-4.3: IL03* **DNA Computing and Robotics**
M.N. STOJANOVIC, Columbia University, Fort Lee, NJ, USA

THURSDAY JUNE 12 MORNING

Session E-6 - Biomimetic Flow Control in Aquatic Systems and its Application to Bioinspired Autonomous Underwater Vehicles

Room: SCILLA

Chair: M. PASCHEN, University of Rostock, Rostock, Germany

- 9.30 *E-6: IL07 Modeling the Dynamics of Human Swimming*
MOTOMU NAKASHIMA, Tokyo Institute of Technology, Tokyo, Japan
- 10.00 *E-6: IL08 Geometric Mechanics and Aquatic Locomotion Through Vortex Shedding*
S.D. KELLY, University of North Carolina, Charlotte, NC, USA
- 10.30 *E-6: IL09 Vortex Rings in Bio-inspired and Biological Jet Propulsion*
P.S. KRUEGER, Southern Methodist University, Dallas, TX, USA
- 11.00 Coffee Break

Chair: P.S. KRUEGER, Southern Methodist University, Dallas, TX, USA

- 11.30 *E-6: IL10 Probing the Hydrodynamics of Fish-like Swimming via Numerical Simulation: Recent Insights and Future Challenges*
I. BORAZJANI, F. SOTIROPOULOS, University of Minnesota, Minneapolis, MN, USA
- 12.00 *E-6: IL11 Fluid-structure Interactions in Pelagic Trawls and Probable Consequences for the Selectivity of the Fishing Gear*
M. PASCHEN, H.-J. WINKEL, H. KNUTHS, University of Rostock, Rostock, Germany

Session A-7 - Smart Nanocomposites and Nanomaterials

Room: **ORLANDO A**

Chair: N.R. SOTTOS, University of Illinois at Urbana, Urbana, IL, USA

- 15.00 *A-7: IL01* **Designing Soft Nanocarbons by Programmed Assembly**
TAKUZO AIDA, TAKANORI FUKUSHIMA, The University of Tokyo, Tokyo, Japan
- 15.30 *A-7: L02* **Tailoring the Long Range Order of Block Copolymer Based Nanomasks on Flat Substrates**
R.A. PUGLISI, P. LA FATA, S. LOMBARDO, CNR-IMM, Catania, Italy
- 15.50 *A-7: L03* **High Internal Phase Emulsion Foams (HIPE) Filled with Organo-bentonite: Hybrid Organic-inorganic Porous Clay Heterostructures (HPCH) Versus Organo-modified Bentonite (MOD)**
P. PAKEYANGKOON, R. MAGARAPHAN, P. MALAKUL, M. NITHITANAKUL, Chulalongkorn University, Bangkok, Thailand
- 16.10 *A-7: L04* **The Effect of Transition Metal on the Thermal Conductivity of Filled Epoxy Resin**
K. WATTANAKUL, H. MANUSPIYA, T. CHAISUWAN, N. YANUMET, H. ISHIDA, Petroleum and Petrochemical College, Chulalongkorn, Bangkok, Thailand
- 16.30 Coffee Break

THURSDAY JUNE 12 AFTERNOON

Session A-8 - MEMS / NEMS

Room: ORLANDO B

Chair: J. VOROS, ETH Zurich, Zurich, Switzerland

- 15.00 *A-8: IL17* **Combinatorial Studies and Scaling in Smart Metallic Thin Film Materials**
R. SPOLENAK, ETH Zurich, Zurich, Switzerland
- 15.30 *A-8: L18* **A Novel Fuel Cell Electrode Structure with Porous Pt Layer Formed on a Si Substrate**
MASANORI HAYASE, T. FUJII, J.G.A. BRITO-NETO, Tokyo University of Science, Noda, Chiba, Japan
- 15.50 *A-8: L20* **Electromechanical Behavior of Single and Multiwall Carbon Nanotubes**
A. PANTANO, Università degli Studi di Palermo, Italy; D.M. PARKS, M.C. BOYCE, MIT, USA; M. NARDELLI, North Carolina State University, USA
- 16.10 *A-8: L21* **RF MEMS Devices Using PZT Thin Films**
R.G. POLCAWICH, J. PULSKAMP, D. JUDY, M. DUBEY, P. AMIRTHARAJ, US Army Research Laboratory, Adelphi, MD, USA
- 16.30 *A-8: L22* **Superelastic and Shape Memory Micro-nano Devices**
J. SAN JUAN^{1,2}, M.L. NO¹, C.A. SCHUH², ¹Universidad del Pais Vasco, Bilbao, Spain; ²MIT, Cambridge, MA, USA
- 16.50 *Coffee Break*

Session A-10.5 - Applications

Room: RINALDO B

Chair: D. FAVIER, Universities of Grenoble, Grenoble, France

- 15.30 *A-10.5: IL07* **Superelastic NiTi Thin Films for Medical Applications**
E. QUANDT, C. ZAMPONI, CAU Kiel, Kiel, Germany
- 16.00 *A-10.5: L09* **Smartflex[®] NiTi Wires for Shape Memory Actuators**
A. CODA, F. BUTERA, G. VERGANI, L. FUMAGALLI, L.L. TOIA, SAES Getters SpA, Lainate (MI), Italy
- 16.20 *A-10.5: L10* **Structuring of Sputtered Superelastic NiTi Thin Films Tubes by Photolithography and Wet-etching**
R. LIMA DE MIRANDA, C. ZAMPONI, E. QUANDT, University of Kiel, Kiel, Germany
- 16.40 *Coffee Break*

Session A-11.1 - Adaptive / Active Textiles

Room: **BELLINI**

Chair: MASATSUGU KIDODE, Nara Institute of Science and Technology, Nara, Japan

- 15.30 *A-11.1: IL09* **Investigating SMART Membranes and Coatings by In Situ Synthesis of Iron Oxide Nanoparticles in PVA Hydro Gels**
G.K. STYLIOS, T. WAN, Heriot-Watt University, Galashiels, UK
- 16.00 *A-11.1: IL10* **Lotus-effect®: Biomimetic Super-hydrophobic Surfaces and their Application**
M. SPAETH, W. BARTHLOTT, University of Bonn, Bonn, Germany
- 16.30 *A-11.1: L12* **Gold Coated Yarn for Medical Applications**
A. SCHWARZ, J. HAKUZIMANA, E. GASANA, P. WESTBROEK, L. VAN LANGENHOVE, Ghent University, Zwijsnaarde (Gent), Belgium
- 16.50 *Coffee Break*

Chair: G.K. STYLIOS, Heriot-Watt University, Galashiels, USA

- 17.20 *A-11.1: IL11* **Characteristics of Carbon-polymer Composite System Prepared by Gelation Crystallization from Solution and the Application to Clothing Materials**
MASARU MATSUO, S. ISAJI, Q. CHEN, Nara Women's University, Nara, Japan
- 17.50 *A-11.1: IL13* **Thin-film Silicon for E-textiles**
S. WAGNER, Princeton University, Princeton, NJ, USA

Session A-12.1 - Materials

Room: ETNA

Chair: QIBING PEI, University of California, Los Angeles, CA, USA

- 15.00 *A-12.1: IL08* **Metal Ion Implanted Compliant Electrodes in Dielectric Electroactive Polymer (EAP) Membranes**
P. DUBOIS, S. ROSSET, M. NIKLAUS, H. SHEA, EPFL, Lausanne, Switzerland; M. DADRAS, University of Neuchâtel, Switzerland
- 15.30 *A-12.1: IL09* **Conducting Polymer Actuators: Rate Limits**
J.D. MADDEN, CHI-WAH E. FOK, T. SHOA, T. MIRFAKHRAI, University of British Columbia, Vancouver, BC, Canada
- 16.00 *A-12.1: L10* **Potential Electroactive Actuators Based on Liquid Crystalline Elastomers and Ferroelectric Nano-particles**
V. DOMENICI^{1,2}, B. ZUPANCIC¹, M. REMSKAR¹, V. V. LAGUTA³, C.A. VERACINI², B. ZALAR¹, ¹Jozef Stefan Institute, Ljubljana, Slovenja; ²Dipartimento di Chimica e Chimica Industriale, Pisa, Italy; ³Ukrainian Acad. Sci., Inst. Problems Mat. Sci., Kiev, Ukraine

16.20 *Coffee Break*

Chair: J.D. MADDEN, University of British Columbia, Vancouver, Canada

- 16.50 *A-12.1: IL11* **Tough Hydrogel - Learn from Nature**
JIAN PING GONG, HIDEMITSU FURUKAWA, Hokkaido University, Sapporo, Japan
- 17.20 *A-12.1: L12* **Enhancing the Electro-mechanical Response of Maxwell Stress Actuators**
G. GALLONE, G. LEVITA, F. CARPI, F. GALANTINI, D. DE ROSSI, University of Pisa, Pisa, Italy
- 17.40 *A-12.1: L13* **Conducting IPN Fibers: A New Design for Linear Actuation in Open Air**
C. PLESSE, F. VIDAL, D. TEYSSIE, C. CHEVROT, University of Cergy-Pontoise, Cergy-Pontoise, France

Session B-2 - Passive, Active and Adaptive Optical Devices & Systems

Room: ORLANDO C

B-2.2 Adaptive Optical Elements and Adaptive / Smart Structures

Chair: C.R. CUNNINGHAM, UK Astronomy Technology Center, Edinburgh, UK

15.30 *B-2.2: IL02 MEMS-based Photonic Modulators*

W. NOELL, Y. PÉTREMAND, S. WALDIS, M. ZICHAR, N.F. DE ROOIJ, University of Neuchâtel, Neuchatel, Switzerland; M. EPITAUX, Formerly at Intel Corporation, Newark, CA, USA; T. OVERSTOLZ, R. STANLEY, CSEM, Neuchatel, Switzerland; F. ZAMKOTSIAN, Lab. d'Astrophysique de Marseille, Marseille, France; R. HAUFFE, Hymite GmbH, Berlin, Germany

16.00 *B-2.2: IL04 Adaptive Optics and the Human Eye*

L. DIAZ-SANTANA, City University, London, UK

16.30 *Coffee Break*

B-2.1 Optical MEMS, Smart Optical Sensors and Devices

Chair: H. BARTELT, Institute of Photonic Technology, Jena, Germany

17.00 *B-2.1: IL04 Enabling Devices Using MicroElectroMechanical System (MEMS) Technology for Optical Networking*

D.M. MAROM, Hebrew University, Jerusalem, Israel

17.30 *B-2.1: IL05 P-OLED / CMOS Microdisplays*

I. UNDERWOOD, A. BUCKLEY, C. YATES, M. NEWSAM, R. WOODBURN, MicroEmissive Displays Ltd., UK

Session C-3 - Smart Structures and Integrated Systems

Room: **MANFREDI A**

Chair: C. BOLLER, University of Sheffield, Sheffield, UK

- 15.00 *C-3: L25* **Design and Development of a Green Storage Tank for Thermo-controlled Water Supply**
HUNG-CHENG TSAI, Nanhua University, Chiayi, Taiwan; HUNG-JUNG TSAI, FEI-KUNG HUNG, WuFeng Institute of Technology, Chiayi, Taiwan
- 15.20 *C-3: L27* **Remotely Controllable SHM System for a Concrete Box-girder Bridge**
JONG JAE LEE, Sejong University, Seoul, Korea; K.Y. KOO, J.Y. HONG, C.B. YUN, KAIST, Daejeon, Korea
- 15.40 *C-3: IL28* **Wireless and Self-powered Smart Structures**
D. GUYOMAR, INSA Lyon, Villeurbanne, France
- 16.10 *C-3: IL29* **Some Advances in Energy Recycling Semiactive Vibration Suppression**
JUNJIRO ONODA, Japan Aerospace Exploration Agency, Sagamihara, Japan
- 16.30 *Coffee Break*

Chair: D. GUYOMAR, INSA Lyon, Villeurbanne, France

- 17.00 *C-3: IL30* **Experimental Investigation of Effectiveness of Smart Passive System for Seismic Protection of Building Structures**
HYUNG-JO JUNG, HEON-JAE LEE, DONG-DOO JANG, KAIST, Daejeon, Korea; SEOK-JUN MOON, KIMM, Korea
- 17.30 *C-3: IL31* **Amplification of Interstory Drift and Velocity for the Passive Control of Structural Vibrations**
M. DI PAOLA¹, F. LO IACONO², G. NAVARRA¹, ¹Università degli Studi di Palermo, Palermo, Italy; ²Università "Mediterranea" di Reggio Calabria, Reggio Calabria, Italy

Session C-4 - Structural Monitoring

Room: **MANFREDI B**

Chair: C. SYRMAKESIS, University of Athens, Athens, Greece

- 15.00 **C-4: L15 Monitoring the Condition of Thermoset Composite Elements by Using a "Multi-Axial Strain" Fibre Optic Sensor**
G. LUYCKX, E. VOET, W. DE WAELE, W. VAN PAEPEGEM, J. DEGRIECK, Ghent University, Ghent, Belgium; J. VLEKKEN, FOS&S, Geel, Belgium
- 15.20 **C-4: L16 High Strain Monitoring During Fatigue Loading of Thermoplastic Composites Using Imbedded Draw Tower Fibre Bragg Grating Sensors**
E.J. VOET, G. LUYCKX, I. DE BAERE, J. DEGRIECK, Ghent University, Ghent, Belgium; J. VLEKKEN, E. JACOBS, FOS&S, Geel, Belgium; H. BARTELT, IPHT, Jena, Germany
- 15.40 **C-4: L17 Self-detection of Delamination in Active Fiber Composites**
DWO-WEN WANG, WEN-CHIH TSAI, CHING-CHUNG YIN, National Chiao Tung University, Hsinchu, Taiwan, ROC
- 16.00 **C-4: L18 Stochastic Vector AutoRegressive eXogenous (VARX) Identification of a Smart Composite Beam**
J.D. HIOS, S.D. FASSOIS, University of Patras, Patras, Greece
- 16.20 **C-4: L19 Optimisation of Signal Pre-processing for the Integration of Cost-effective Local Intelligence in Wireless Self-powered Structural Health Monitoring**
T. MONNIER, P. GUY, M. LALLART, L. PETIT, D. GUYOMAR, C. RICHARD, INSA-Lyon, Villeurbanne, France
- 16.40 *Coffee Break*

THURSDAY JUNE 12 AFTERNOON

Session D-6 - Advances in Mini / Micro / Nano Implantable Devices

Room: RINALDO C

Chair: M. SAWAN, Ecole Polytechnique Montreal, Canada

- 15.00 *D-6: IL01* **Intelligent Polymer Networks as Recognition and Actuation Elements**
J.Z. HILT, University of Kentucky, Lexington, KY, USA
- 15.30 *D-6: IL02* **Energy Efficient Biomedical Signal Processing in Implantable Devices**
V. ÖWALL, L. SÖRNMO, J. NEVES RODRIGUES, Lund University, Lund, Sweden
- 16.00 *D-6: L03* **Towards an Integrated, Fully-Implantable Vestibular Prosthesis for Balance Restoration**
T.G. CONSTANDINOU^{1, 2}, J. GEORGIU¹, C. TOUMAZOU²,
¹University of Cyprus, Nicosia, Cyprus; ²Imperial College London, London, UK
- 16.20 *D-6: IL04* **Implantable Electronics for the Recovery of Neuromuscular Functions**
M. SAWAN, Ecole Polytechnique, Montreal, Canada
- 16.50 Coffee Break

Session D-7 - Medical Applications of Shape Memory Materials and Smart Textiles

Room: RINALDO C

Chair: T. ANSON, Brunel University, Uxbridge, UK

- 17.20 *D-7: L02* **Fatigue properties of superelastic Nitinol filaments for braided orthopedic cables**
Y. BARIL, V. BRAILOVSKI, P. TERRIAULT, Ecole de Technologie Supérieure, Montréal (Quebec), Canada
- 17.40 *D-7: IL03* **Theory and Experiments for Mechanically-induced Remodeling of Tissue Engineered Blood Vessels**
R.L. GLEASON, Georgia Institute of Technology, Atlanta, GA, USA
- 18.10 *D-7: L05* **Design and Validation of a Progressively Expandable Stent**
P. TERRIAULT, P. LAFORTUNE, D. PLAMONDON, V. BRAILOVSKI, Ecole de Technologie Supérieure, Montréal, Québec, Canada; D. LE PORHO, Polyconsult International Inc., Longueuil, Québec, Canada; R. GALLO, Montreal Heart Institute, Montréal, Québec, Canada

Session E-4 - Biologically Inspired Systems, and Robotics

Room: RINALDO A

E-4.1 Systems

Chair: N. FRANCESCHINI, CNRS & University of the Mediterranean, Marseille, France

- 15.30 *E-4.1: IL01 Towards In Vivo Nanomachines*
E. FRIEDRICHS, R. JUNGSMANN, A. TSOKOU, S. RENNER, F. C. SIMMEL, Technical University Munich, Garching, Germany
- 16.00 *E-4.1: IL02 Morphing Aircraft in Perching Maneuvers*
E. GARCIA, A. WICKENHEISER, J. DIETL, J. MANZO, Cornell University, Ithaca, NY, USA
- 16.30 Coffee Break

Session E-2 - Biomimetic Materials

Room: RINALDO A

E-2.2 Bio-inspired Manufacturing

Chair: A.R. BRISSON, University of Bordeaux, Talence, France

- 17.00 *E-2.2: IL01 Biomimetic Materials Processing*
OSAMU TAKAI, Nagoya University, Nagoya, Japan
- 17.30 *E-2.2: IL02 Recombinant Spider Silk - Remodelling a Fascinating Biomaterial*
T. SCHEIBEL, University of Bayreuth, Bayreuth, Germany
- 18.00 *E-2.2: L03 Bio-Inspired Nanofabrication of Semiconductors and Dynamically Adaptive Optical Materials*
D.E. MORSE, University of California, Santa Barbara, CA, USA

THURSDAY JUNE 12 AFTERNOON

Session E-6 - Biomimetic Flow Control in Aquatic Systems and its Application to Bioinspired Autonomous Underwater Vehicles

Room: SCILLA

Chair: NAOMI KATO, Osaka University, Osaka, Japan

- 15.00 *E-6: IL13* **Biomechanics in Swimming: from Hydrodynamic Propulsion to Dynamic Maneuverability**
HAO LIU, Chiba University, Chiba, Japan
- 15.30 *E-6: IL14* **Biologically Inspired Control Surfaces and Propulsors for Underwater Vehicles**
A.H. TECHET, M.J. STANWAY, MIT, Cambridge, MA, USA
- 16.00 *E-6: IL15* **Hammerhead: A Vision-guided AUV**
R.L. ALLWOOD, Cranfield University, Cranfield, Bedfordshire, UK
- 16.30 Coffee Break

Chair: A.H. TECHET, MIT, Cambridge, MA, USA

- 17.00 *E-6: IL16* **Bio-inspiration and Implementation of a Soft Undulatory Swimming Robot**
B.L. STOIMENOV, RIKEN, Nagoya, Japan; J.M. ROSSITER, University of Bristol, Bristol, UK; Y. NAKABO, AIST, Tsukuba, Japan; T. MUKAI, RIKEN, Nagoya, Japan
- 17.30 *E-6: IL17* **Robustness of Biomimetic Underwater Vehicles under Disturbances**
NAOMI KATO, HIROYOSHI SUZUKI, Osaka University, Suita, Osaka, Japan

POSTER DISCUSSION: 18.30 - 19.45

Green Label Posters

Posters whose last number is an odd number, i.e. A-2:P09

FRIDAY JUNE 13 MORNING

Session A-7 - Smart Nanocomposites and Nanomaterials

Room: ORLANDO A

Chair: TAKUZO AIDA, The University of Tokyo, Tokyo, Japan

- 9.00 **A-7: IL06 Towards Nanoscale Self-healing**
N.R. SOTTOS, B.J. BLAISZIK, P.V. BRAUN, A. JACKSON, S.R. WHITE, University of Illinois, Urbana-Champaign, IL, USA
- 9.30 **A-7: L09 Environment Adaptive Friction Reducing Nanocomposites with Remaining Life Sensor Capability for Aerospace Applications**
A.A. VOEVODIN, C. MURATORE, J.G. JONES, Wright-Patterson Air Force Base, Dayton, OH, USA
- 9.50 **A-7: IL11 Polymer-metal Nanocomposites for Functional Applications**
F. FAUPEL, V. ZAPOROJTCHENKO, H. GREVE, U. SCHÜRMMANN, H. TAKELE, C. HANISCH, V.S.K. CHAKRAVADHANULA, A. KULKARNI, Christian-Albrechts University at Kiel, Kiel, Germany; A. GERBER, E. QUANDT, Inorganic Functional Materials; R. PODSCHUN, University Hospital Schleswig-Holstein, Kiel, Germany
- 10.20 **A-7: L12 Nano/Micro-sized $\text{Ge}_2\text{Sb}_2\text{Te}_5$ Structures Formed (100)/(111) Si Substrate by Electrical Pulse Induced Evaporation Method**
H.J. KIM, S.K. CHOI, Korea Advanced Institute of Science and Technology, Daejeon, Korea
- 10.40 **A-7: L13 Functionalized Nanostructures with Noble Metals Shells and Magnetic Cores**
O. PANA, R. TURCU, M.L. SORAN, A. NAN, National Institute R&D for Isotopic and Molecular Technologies, Cluj-Napoca, Romania; O. CHAUVET, C. PAYEN, E. GAUTRON, Institute of Materials Jean Rouxel, Nantes, France
- 11.00 Coffee Break

FRIDAY JUNE 13 MORNING

Session A-8 - MEMS / NEMS

Room: ORLANDO B

Chair: S. GARIGLIO, University of Geneva, Geneva, Switzerland

- 9.30 *A-8: IL24* **The Promise and Potential of Nano and Micro Systems for Military Applications**
J.M. PELLEGRINO, Director, Sensors and Electron Devices Directorate, US Army Research Lab., Adelphi, MD, USA
- 10.00 *A-8: L25* **Fully Integrated Bridge-type Anemometer in LTCC-based Microfluidic Systems**
H. BARTSCH DE TORRES, C. RENSCH, T. THELEMANN, M. FISCHER, J. MÜLLER, M. HOFFMANN, TU Ilmenau, Germany
- 10.20 *A-8: L26* **Improvement of MEMS Vibrational Energy Scavenging Devices**
L.M. MILLER, N.C. EMLEY, P. SHAFER, P.K. WRIGHT, University of California, Berkeley, CA, USA
- 10.40 *Coffee Break*

Chair: J.M. PELLEGRINO, US Army Research Lab., Adelphi, MD, USA

- 11.00 *A-8: L28* **3C-silicon Carbide Hetero-epitaxial Films for Sensors Fabrication**
R. ANZALONE, G. D'ARRIGO, F. LA VIA, IMM-CNR, Catania, Italy; G. CONDORELLI, M. MAUCERI, Epitaxial Techn. Center, Catania, Italy; G. FOTI, University of Catania, Catania, Italy
- 11.20 *A-8: IL29* **RF MEMS Products and Applications**
D. HYMAN, XCOM Wireless Inc., Signal Hill, CA, USA
- 11.50 *A-8: L30* **Porous Metal Frameworks on Silicon Substrates**
J.G.A. BRITO NETO, TAKU MATSUZAKA, YOSUKE SAITO, MASANORI HAYASE, Tokyo University of Science, Noda, Chiba, Japan

FRIDAY JUNE 13 MORNING

Session A-10.1 - Materials

Room: RINALDO B

Chair: SHUICHI MIYAZAKI, University of Tsukuba, Tsukuba, Japan

- 9.00 *A-10.1: IL08* **Metamagnetic Shape Memory in the NiMnIn and NiMnSn Based Heusler-type Alloys**
RYOSUKE KAINUMA, W. ITO, K. OIKAWA, K. ISHIDA, Tohoku University, Sendai, Japan
- 9.30 *A-10.1: IL09* **Glassy Martensite**
XIAOBING REN, National Institute for Materials Science, Tsukuba, Japan
- 10.00 *A-10.1: L10* **Co-doping: Tuning Ni-Mn-Ga for Actuator Application?**
K. ROLFS, N. ALLIOUANE, R. SCHNEIDER, Hahn-Meitner-Institut, Berlin, Germany; A. MECKLENBURG, J.-M. GULDBAKKE, TU Braunschweig, Germany; M. CHMIELUS, Boise State University, Boise, USA; J. BROWN, Institut Laue-Langevin, Grenoble, France
- 10.20 *A-10.1: L11* **Work Output Enhancement of Ferromagnetic Shape Memory Micro Actuators**
Y. GANOR, D. SHILO, Technion, Haifa, Israel
- 10.40 *A-10.1: L12* **High Energy Milling and Hot Extrusion of Equiatomic NiTi Shape Memory Alloy**
L.C. DA SILVA, IPEN, Sao Paulo, Brazil; F. AMBROZIO FILHO, UNIFEI, Sao Bernardo, Brazil; M.C.A. DA SILVA, Universidade de Sao Paulo, Brazil
- 11.00 *Coffee Break*

Chair: S. BESSEGHINI, IENI-CNR, Lecco, Italy

- 11.30 *A-10.1: IL13* **Ni-free Ti-base Shape Memory Alloys**
SHUICHI MIYAZAKI, HEE YOUNG KIM, University of Tsukuba, Tsukuba, Ibaraki, Japan
- 12.00 *A-10.1: IL14* **Elastic Properties of Shape Memory Alloys**
M. LANDA¹, P. SEDLAK^{1, 2}, H. SEINER^{1, 2}, L. BICANOVA^{1, 2}, L. HELLER¹, P. SITTNER³, V. NOVAK³, ¹Institute of Thermomechanics, ASCR, Prague, Czech Republic; ²Czech Technical University, Prague, Czech Republic; ³Institute of Physics, ASCR, Prague, Czech Republic
- 12.30 *A-10.1: L16* **Development of Cu-Al-Mn Based Shape Memory Alloys: Application to Medical Devices**
Y. SUTOU, T. OMORI, R. KAINUMA, Y. YAMAGUCHI, K. ISHIDA, Tohoku University, Sendai, Japan

FRIDAY JUNE 13 MORNING

Session A-11.2 - E-textiles

Room: **BELLINI**

Chair: P. CALVERT, University of Massachusetts, N. Dartmouth, MA, USA

- 9.30 *A-11.2: IL05* **Current Solutions for Integration of Electronic into Garments**
I. LOCHER, Sefar AG, Heiden, Switzerland
- 10.00 *A-11.2: IL06* **STELLA - STretchable ELelectronics for Large Area Applications - A New Technology for Smart Textiles**
C. KLATT, Freudenberg Forschungsdiense KG, Weinheim, Germany
- 10.30 *A-11.2: L07* **Future Intelligent Textiles**
T. DIAS, The University of Manchester, Manchester, UK
- 10.50 *A-11.2: L07B* **Innovating for the future. The rise of "soft machines", "smart" ICT and materials that start to think**
R. OLIVER, Centre for Emerging Nano, Micro & Photonic Systems, The Fabrian Centre, Newcastle upon Tyne, UK
- 11.10 *Coffee Break*

Chair: C. KLATT, Freudenberg Forschungsdiense KG, Weinheim, Germany

- 11.40 *A-11.2: IL08* **Embroidered Interconnections and Encapsulation for Electronics Applications in Textiles**
T. LINZ, C. DILS, R. VIEROTH, Fraunhofer IZM, Berlin, Germany
- 12.10 *A-11.2: L10* **Strains Sensors and Chemical Sensors Printed onto Textiles**
P. CALVERT, P. PATRA, D. DUGGAL, A. AGRAWAL, University of Massachusetts, N. Dartmouth, MA, USA
- 12.30 *A-11.2: L11* **Photonic Textiles**
L. VAN PIETERSON, R. BHATTACHARYA, K. KRIEGE, O. VAN LOON, P. BOUTEN, Philips Research Labs, Eindhoven, The Netherlands

Session A-12.3 - Devices and Applications

Room: ETNA

Chair: R. PELRINE, SRI International, Menlo Park, CA, USA

- 9.30 **A-12.3: IL01 Multilayer Actuator and Sensor Sheets with Smart Compliant Electrodes**
P. SOMMER-LARSEN, K. HANSEN, Risoe National Laboratory, Roskilde, Denmark; M. BENSLIMANE, Danfoss A/S
- 10.00 **A-12.3: L03 Bio-inspired Distributed Electroactive Polymer Actuators for Future Space Applications: Concept Design**
F. CARPI¹, C. MENON², D. DE ROSSI¹, ¹University of Pisa, Pisa, Italy; ²Simon Fraser University, Burnaby, Canada
- 10.20 **A-12.3: L04 Contractile and Buckling Actuators Based on Dielectric Elastomers: Devices and Applications**
F. CARPI, G. FREDIANI, A. MANNINI, D. DE ROSSI, University of Pisa, Pisa, Italy
- 10.40 *Coffee Break*

Chair: KINJI ASAKA, AIST, Osaka, Japan

- 11.10 **A-12.3: IL05 Variable-stiffness-mode Dielectric Elastomer Devices**
R. PELRINE, SRI International, Menlo Park, CA, USA
- 11.40 **A-12.3: IL06 EAP Nanofibers for Biomedical Applications**
SEON JEONG KIM, Hanyang University, Seoul, Korea
- 12.10 **A-12.3: IL07 Electroactive Polymer - Overcoming the Obstacles to Real Products**
C. DUNCHEON, Artificial Muscle, Inc., Menlo Park, CA, USA

Session B-3 - Ongoing Applications and Perspectives

Room: **ORLANDO C**

Chair: C.G. GRANQVIST, Uppsala University, Uppsala, Sweden

- 9.30 *B-3: IL01* **The Smart Bridge of the Future**
B. CULSHAW, University of Strathclyde, Glasgow, Scotland
- 10.00 *B-3: L03* **Alumina Sol-gel Protective Coatings on Multi-spectral ZnS Windows**
G.S. GRADER, M. MANN-LAHAV, G.E. SHTER, D. ESTERLIS, Technion, Haifa, Israel
- 10.20 *B-3: L05* **Nanostructured Functional Coatings for Optical Applications**
L. RABOIN, M. MATHERON, T. GACOIN, J.-P. BOILOT, Ecole Polytechnique, Palaiseau, France
- 10.40 *Coffee Break*

Chair: B. CULSHAW, University of Strathclyde, Glasgow, UK

- 11.10 *B-3: IL06* **Smart Focal Plane Technologies for Optical and Infrared Astronomy**
C.R. CUNNINGHAM, UK Astronomy Technology Center, Edinburgh, Scotland, UK
- 11.40 *B-3: IL07* **Smart Windows**
C.G. GRANQVIST, Uppsala University, Uppsala, Sweden
- 12.10 *B-3: IL08* **Fiber Bragg Grating Sensors Advancements and Industrial Applications**
A. CUTOLO, A. CUSANO, OptoSmart Srl, Napoli, Italy and University of Sannio, Benevento, Italy

FRIDAY JUNE 13 MORNING

Session C-4 - Structural Monitoring

Room: MANFREDI B

Chair: C. PAPADIMITRIOU, University of Thessaly, Volos, Greece

- 8.50 *C-4: L20 Numerical Simulation for Health Monitoring of Concrete Structure Based on Smart Piezoelectric Transducer Array*
WEI SUN^{1, 2}, SHI YAN², G. SONG³, H. GU³, ¹Dalian University of Technology, Dalian Liaoning, China; ²Shenyang Jianzhu University, Shenyang Liaoning, China; ³University of Houston, TX, USA
- 9.10 *C-4: L21 Wavelet-Based Algorithm for Ultrasonic Structural Monitoring of Waveguides*
M. CAMMARATA, University of Pittsburgh, PA, USA; D. DUTTA, Carnegie Mellon University, Pittsburgh, PA, USA; H. SOHN, KAIST, Daejeon, South Korea; P. RIZZO, K.A. HARRIES, University of Pittsburgh, Pittsburgh, PA, USA
- 9.30 *C-4: L22 Damage Detection in Beam-like Structures Using Deflections Obtained by Modal Flexibility Matrices*
KI YOUNG KOO, C.B. YUN, Korea Advanced Institute of Science and Technology, Daejeon, Korea; J.T. KIM, Pukyong National University, Busan, Korea; Y.H. HUH, Korea Research Institute of Standards and Science, Daejeon, Korea
- 9.50 *C-4: L23 Development of a Structural Health Monitoring Benchmark Problem for High-rise Structures*
Y. XIA, Y.Q. NI, Y.F. DUAN, J.M. KO, The Hong Kong Polytechnic University, Kowloon, Hong Kong
- 10.10 *C-4: L24 Continuing Structural Health Monitoring after Repair: Start from Scratch?*
J. KULLAA, Helsinki Polytechnic Stadia, Helsinki, Finland
- 10.30 *C-4: L25 Multivariate Statistical Analysis for Detection and Identification of Faulty Sensors Using Latent Variable Methods*
M. HERNANDEZ-GARCIA, S.F. MASRI, University of Southern California, Los Angeles, CA, USA
- 10.50 *C-4: L26 Numerical Methods in the Dynamic Analysis of Buildings Provided with Viscoelastic Devices*
G. MUSCOLINO, University of Messina, Messina, Italy; A. PALMERI, University of Bradford, UK
- 11.10 *Coffee Break*
- Chair:* R. SKELTON, University of California, San Diego, CA, USA
- 11.40 *C-4: IL27 Dynamic Response-based Health Monitoring of Civil Structures Under Environmental Influences*
M.P. SINGH, H. NANDAN, Virginia Tech, Blacksburg, VA, USA
- 12.10 *C-4: IL28 Optimization Algorithms for System Integration*
C. PAPADIMITRIOU, E. NTOTSIOS, University of Thessaly, Volos, Greece
- 12.40 *C-4: IL29 On the Relationship between Robustness and Monitoring*
M.H. FABER, ETH Zürich, Zürich, Switzerland

Session C-5 - Ongoing and Perspective Applications

Room: **MANFREDI A**

Chair: J. HOLNICKI-SZULC, Institute of Fundamental Technological Research, Warsaw, Poland

- 9.00 *C-5: L09* **Wireless Sensor Node Development for Bridge Condition Assessment**
CHUL-WOO KIM, M. KAWATANI, M. TSUKAMOTO, N. FUJITA, Kobe University, Kobe, Japan
- 9.20 *C-5: L10* **Quantifying the Benefit of Smart Technologies in a Life-cycle Context**
D.M. FRANGOPOL, R.K. FAZLUR, Lehigh University, Bethlehem, PA, USA; T.B. MESSERVEY, University of Pavia, Pavia, Italy
- 9.40 *C-5: L11* **Wing Mechanization Design and Analysis for a Perching Micro Air Vehicle**
J.M. LUKENS, University of Dayton, Dayton, OH, USA; G.W. REICH, B. SANDERS, Air Vehicles Directorate, WPAFB, OH, USA
- 10.00 *C-5: IL13* **Maltese Falcon, Megayacht with Smart Masts and Yards**
D. ROBERTS, Insensys Ltd., Southampton, UK
- 10.30 *C-5: IL14* **Multifunctional Textiles for Protection Against Natural Hazards**
D. ZANGANI, D'Appolonia SpA, Genova, Italy
- 11.00 *Coffee Break*

Chair: HOON SOHN, KAIST, Daejeon, Korea

- 11.30 *C-5: IL15* **Smart Patches for Repairing Aircraft Structures**
A. GÜEMES, Universidad Politecnica de Madrid, Madrid, Spain
- 12.00 *C-5: IL16* **Adaptive Impact Absorption and Applications to Landing Devices**
J. HOLNICKI-SZULC, P. PAWLOWSKI, G. MIKULOWSKI, C. GRACZYKOWSKI, Institute of Fundamental Technological Research, Warsaw, Poland

FRIDAY JUNE 13 MORNING

Session D-5 - New Therapeutics and Intelligent Delivery Systems

Room: RINALDO C

Chair: D. DE ROSSI, University of Pisa, Pisa, Italy

- 9.00 *D-5: IL06 Multifunctional Pharmaceutical Nanocarriers for Drug Delivery and Diagnostic Applications*
V.P. TORCHILIN, Northeastern University, Boston, MA, USA
- 9.30 *D-5: IL07 Supramolecular Approach to Gene Delivery*
NOBUHIKO YUI, Japan Advanced Institute of Science and Technology, Nomi, Ishikawa, Japan
- 10.00 *D-5: L09 Multifunctional Nanoparticles Decorated by Trastuzumab for Targeted Chemotherapy of Breast Cancer*
BINGFENG SUN, S.-S. FENG, National University of Singapore, Singapore
- 10.20 *D-5: IL08 Electrohydrodynamic Forming of Capsules and Microspheres for Drug Delivery*
M.J. EDIRISINGHE, E.P. STRIDE, University College London, London, UK
- 10.50 *D-5: L10 Inhibition of Alzheimer Amyloid Aggregation with Sulfated Glycopolymers*
YOSHIKO MIURA, KIYOFUMI YAMAMOTO, Japan Advanced Institute of Science and Technology, Nomi, Ishikawa, Japan; KIKUKO YASUDA, YOSHIHIRO NISHIDA, KAZUKIYO KOBAYASHI, Nagoya University, Nagoya, Japan
- 11.10 Coffee Break

Session D-7 - Medical Applications of Shape Memory Materials and Smart Textiles

Room: RINALDO C

Chair: NOBUHIKO YUI, Japan Advanced Institute of Science and Technology, Nomi, Ishikawa, Japan

- 11.40 *D-7: IL06 Functional Materials for Wearable Sensors and Actuators*
D. DE ROSSI, University of Pisa, Pisa, Italy
- 12.10 *D-7: IL07 Bio-sensing Textile for Medical Monitoring Applications*
J. LUPRANO, Centre Suisse d'Electronique et de Microtechnique, Neuchâtel, Switzerland; N. TACCINI, Smartex, Navacchio, Italy; F. DI FRANCESCO, University of Pisa, Pisa, Italy; G. MARCHAND, CEAL-LETI, Grenoble, France; C. CHUZEL, Sofileta, Bourgoin-Jallieu, France; H. DE MONCUIT, Thuasne, St-Etienne, France; C. BINI, Penelope, Montemurlo, Italy; K. LAU, Dublin City University, Dublin, Ireland

FRIDAY JUNE 13 MORNING

Session E-4 - Biologically Inspired Systems, and Robotics

Room: RINALDO A

E-4.2 Robotics

Chair: N.C. SEEMAN, New York State University, New York, NY, USA

- 9.30 *E-4.2: IL06* **Biorobots, Nonlinear Dynamics and Perception**
P. ARENA, D. LOMBARDO, L. PATANE', University of Catania, Catania, Italy
- 10.00 *E-4.2: IL07* **On Human Interactive Adaptive Robotics**
ZHIWEI LUO, Kobe University, Kobe, Japan
- 10.30 *E-4.2: L08* **Anthropomorphic Talking Robot Based on Human Biomechanical Structure**
KOTARO FUKUI, YUMA ISHIKAWA, EIJI SHINTAKU, MASAOKI HONDA, ATSUO TAKANISHI, Waseda University, Tokyo, Japan
- 10.50 *E-4.2: L09* **Cyborg MAVs Using Power Harvesting and Behavioral Control Schemes**
T. REISSMAN, E. GARCIA, Cornell University, Ithaca, NY, USA
- 11.10 Coffee Break

"Buffet Lunch": 13.00 - 14.45

*15.00 Transfer by bus to hotels
(congress members are kindly asked to reach
the respective hotels)*

<p>16.30 - 23.30 Escursion to Etna Volcano & Conference Dinner</p>

Bus departure at 16.30 from each hotel

POSTER PRESENTATIONS

POSTER DISCUSSION 1

TUESDAY JUNE 10: 18.30 - 19.45

Red Label Posters

(Posters whose last Number is an even number, i.e.: A-5:P12)

POSTER DISCUSSION 2

THURSDAY JUNE 12: 18.30 - 19.45

Green Label Posters

(Posters whose last Number is an odd number, i.e.: A-2:P09)

Posters desmounting:
(after Poster Discussion 2 or on Friday 13 morning)

SYMPOSIUM A

SMART MATERIALS AND MICRO/NANOSYSTEMS

A-1: P02 Study of Langasite crystal Micro-resonators Using the Length-extension Mode: Temperature-compensated Cuts and Applications to Atomic Force Microscopy

G. DOUCHET, F. STHAL, T. LEBLOIS, E. BIGLER, C. TELLIER, R. BOURQUIN, Femto-ST, UMR CNRS, Besançon, France

A-1: P03 Magnetic Temperature Transducers Made from Copper Based Soft Ferrite

C. MICLEA, C. TANASOIU, C.F. MICLEA, M. CIOANGHER, National Institute for Materials Physics, Magurele - Bucharest, Romania; C. PLAVITU, I. SPANULESCU, C.T. MICLEA, Hyperion University, Bucharest, Romania

A-1: P04 Ferroelectric and Magnetic Properties of Fe Doped PZT Nanoparticles

P. SMITHA, P.K. PANDEY, S. KURIAN, N.S. GAJBHIYE, Indian Institute of Technology, Kanpur, India

A-2: P05 Rapid Shrinking of Porous Hydrogel Prepared by Ice Templating

ERI UMEBAYASHI, WAKAACKI MURAI, KAZUHO SUGURO, TOMOHIRO MOROHOSHI, TSUKASA IKEDA, NORIHIRO KATO, Utsunomiya University, Utsunomiya, Japan

A-2: P06 Preparation of Microporous, Thermosensitive Organic-inorganic Hybrid Hydrogel with Simultaneous Control of Phase Separation and Sol-gel Process

IKU SAKUHARA, ERI UMEBAYASHI, KAZUHO SUGURO, WAKAACKI MURAI, TOMOHIRO MOROHOSHI, TSUKASA IKEDA, NORIHIRO KATO, Utsunomiya University, Utsunomiya, Japan

A-2: P09 Dielectrophoresis Force and the Electromechanical Responses of Elastomers

R. KUNANURUKSAPONG, A. SIRIVAT, Chulalongkorn University, Bangkok, Thailand

A-5: P12 Formation of Highly Transparent SiCN Films Prepared by HWCVD

AKIRA IZUMI, TAKASHI NAKAYAMADA, Kyushu Institute of Technology, Fukuoka, Japan

A-5: P14 Miscibility, Isothermal Crystallization / Melting Behavior, and Morphology of Poly(trimethylene terephthalate) / Poly(buthylene terephthalate) Blends

P. KRUTPHUN, P. SUPAPHOL, Chulalongkorn University, Bangkok, Thailand

A-5: P15 Non-isothermal Crystallization Kinetics and Melting Behavior of Thermoplastic / Liquid Crystalline Polymer Blends of Poly(trimethylene terephthalate) / Vectra A950

P. PENWISA, R. MAGARAPHAN, The Petroleum and Petrochemical College, Bangkok, Thailand

A-5: P16 Sulfonated Poly(ether ether ketone)(S-PEEK) as Derived from Bisphenol-S for PEM

S. CHANGKHAMCHOM, A. SIRIVAT, The Petroleum and Petrochemical College, Bangkok, Thailand

A-5: P17 Two-layer Radar Absorbing Structures Composed of Carbon Black and Carbon Fiber Composites

SANG-YOUNG KIM, SUNG-SOO KIM, Chungbuk National University, Cheongju, Korea

A-5: P21 Synthesis of Carbon Nanofibers as Support Layer for Metal Catalysts in a Microreactor for Three-phase Reactions

D.B. THAKUR, K. SESHAN, L. LEFFERTS, University of Twente, Enschede, The Netherlands; R.M. TIGGELAAR, J.G.E. GARDENIERS, University of Twente, Enschede, The Netherlands

A-5: P23 Functionalized Conducting Polymer-Magnetic Nanoparticles Hybrid Nanocomposites with Tailored Electrical and Magnetic Properties

R. TURCU, A. NAN, O. PANA, I. TURCU, I. CRACIUNESCU, C.V.L. POP, I. BRATU, National Inst. for R&D of Isotopic and Molecular Technologies, Cluj-Napoca, Romania; J. LIEBSHER, Humboldt-Universität Berlin, Berlin; D. BICA, L. VEKAS, Romanian Academy-Timisoara Division, Romania

A-5: P24 Smart Properties of an Irradiated High-Tc Superconductor

A. BALOGH, I. KIRSCHNER, G. KOVACS, Eotvos University, Budapest, Hungary

A-7: P26 Encapsulation of High Dielectric Constant Particles via Miniemulsion Polymerization

D.M. OPRIS, D. CRESPIY, M. MOLBERG, C. LÖWE, F. NÜESCH, Empa, Swiss Federal Institute for Materials Testing and Research, Dübendorf, Switzerland

A-7: P27 Four Growth Modes of Nano/Micro-sized Ge₂Sb₂Te₅ Crystal by the Electrical Pulse Induced Evaporation Method

S.K. CHOI, H.J. KIM, Korea Advanced Institute of Science and Technology, Daejeon, Korea

A-7: P28 Synthesis and Characterization of Nanoparticles Strengthened LIGA Ni

XUEYONG WEI, KYLE JIANG, University of Birmingham, Birmingham, UK

A-7: P29 Low Temperature Growth of ZnO Nanorods by Chemical Bath Method

P. HARI, M. BAUMER, D. SPENCER, D. TEETERS, University of Tulsa, Tulsa, USA

A-7: P31 Characterization of Solvated Modified Natural Rubber Based Polymer Electrolytes for Lithium-ion Batteries

R. IDRIS, N.H. NAINA MOHD, SIRIM Berhad, Kulim, Malaysia

A-7: P33 Characteristics of TiO₂/SnO₂ Thick Film Gas Sensor Added by Metals (Pd, Pt, In, Ru and Rh) for Trimethylamine Gas

JI-YOUNG JUNG, JAE-MOK JUN, CHANG-SEOP LEE, Keimyung University, Daegu, Korea

A-7: P35 Inorganic Mesoporous Membrane for PEMFC

T. KUANCHAITRAKUL, H. MANUSPIYA, Chulalongkorn University, Bangkok, Thailand

A-7: P36 Multifunctional Complex Materials with Nanometric Structure and Controlled Characteristics for Special Destination

I. NEDELICU, SC Prelucrari Metalurgice SRL; I. CARCEANU, A. POPA, Metallurgical Research Institute of Bucharest; G. COSMELEATA, Politehnica University of Bucharest, Bucharest, Romania

A-7: P38 A New Synthesis Route to Prepare Polyaniline (PANI) Nanotubes Containing Magnetic Nanoparticles

A.C.V. DE ARAUJO, S. ALVES Jr., W.M. AZEVEDO, Universidade Federal de Pernambuco, Recife, PE, Brazil

A-7: P39 Investigation of Metal Effect on Gas-sensing Properties of Nanostructured Films Based on Novel Polyphthalocyanines

O.M. IVANOVA, A.G. BORISOV, S.A. KRUTOVERTSEV, JSC "Practic-NC", Zelenograd, Moscow, Russia; A.I. SHERLE, E.F. OLEINIK, Institute of Chemical Physics of RAS, Moscow, Russia

A-7: P40 Nanostructured Films Based on Polyoxometalates for Chemical Gas Sensors

S.A. KRUTOVERTSEV, A.E. TARASOVA, L.S. KRUTOVERTSEVA, O.M. IVANOVA, JSC "Practic-NC", Zelenograd, Moscow, Russia

A-7: P41 First Molecular Conductors with Cobalt Bis(dicarbollide) Anion and its Derivatives

O. KAZHEVA¹, A. CHEKHLOV¹, G. ALEXANDROV², A. KRAVCHENKO³, V. STARODUB³, I. SIVAEV⁴, V. BREGADZE⁴, L. BURAVOV¹, O. DYACHENKO¹,
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A-7: P42 Modulation of the Metallic Oxide Properties Through Techniques of Soft Chemistry for Several Applications

D.C. ALTAMIRANO-JUAREZ, Sierra Sur University, Miahuatlan de Porfirio Diaz, Oaxaca, Mexico

A-8: P44 The Mechanical Behaviour of Silicon Diaphragm for Micromachined Capacitive Pressure Sensor

J. REN, D. CHENELER, M.C. WARD, University of Birmingham, Birmingham, UK; P.K. KINNELL, GE Infrastructure Sensing, Leicester, UK

A-8: P45 GaAs Resonant and Non Resonant Micro-sensors: Design and Simulations

C.R. TELLIER, Femto-st Institute, Besançon, France; S. DURAND, LAUM, Le Mans, France

A-8: P46 Thin Film YBCO Pixels for MMW Detector

E. ZAKAR, D. WIKNER, M. DUBEY, P. AMIRTHARAJ, U.S. Army Research Laboratory, Adelphi, MD, USA

A-8: P47 Micromask Generation for Polymer Morphology Control: Nanohair Fabrication for Synthetic Dry Adhesives

D. SAMEOTO, C. MENON, YASONG LI, Simon Fraser University, Burnaby, BC, Canada

A-8: P49 Wet Etching of Si and GaAs Micro-arrays: Experimental and Theoretical Shapes

T. LEBLOIS, Institute FEMTO-ST, Besançon cedex, France

A: HP01 Spiropyran Modified Microfluidic Chip Channels for Photonically Controlled Sensor Array Detection of Metal Ions

F. BENITO-LOPEZ, S. SCARMAGNANI, Z. WALSH, B. PAULL, M. MACKA, D. DIAMOND, Dublin City University, Dublin, Ireland

A: HP02 Properties of a Bending Sensor based on Galfenol Thin Film

U. MARSCHNER, B. ADOLPHI, U. MERKEL, C. WENZEL, E. STARKE, G. PFEIFER, H. NEUBERT, W.J. FISCHER, Technische Universität Dresden, Dresden, Germany

A: HP03 Dielectric and Piezoelectric Properties of PVDF/ZnO Flexible Composites

C. DAGDEVIREN, M. GÜLLEROGLU, M. PAPILA, Sabanci University, Tuzla, Istanbul, Turkey

A: HP04 New Synthetic Inorganic Nanotubes For Innovative Technological Applications

I.G. LESCI, I. FOLTRAN, E. FORESTI, G. FRACASSO, N. ROVERI, T. ZUCCHERI, University of Bologna, Bologna, Italy

A: HP05 A joint Empa-ETHZ Initiative for Analysis and Development of Compliant Systems

L.F. CAMPANILE, A. HASSE, M. SAUTER, Empa, Dübendorf, Switzerland; E. MAZZA, ETHZ, Switzerland

A: HP06 Natural-Fiber-Reinforced Polymer Composites in Automotive Applications

A.R. CARAMITU, V. NICOLAE, L. AVADANEI, S. COTESCU, M. POPESCU NICUSOR, I. PAUNA, M. BADITA, G. ANGHELACHE, V. LAZAR, I. ION, INCDIE ICPE - CA, Bucuresti, Romania

A: HP07 Preparation and Characterisation of Dense TiO₂ Ceramics

A. PAVLOVA, L. BERZINA-CIMDINA, J. LOCS, D. LOCA, Riga Technical University, Riga, Latvia; J. BOSSERT, Fr. Schiller Univ. Jena, Jena, Germany

A: HP08 Thiophene Containing Polyaromatic Hydrocarbons
C.J. MARTIN, S.D. PERERA, S.M. DRAPER, Trinity College Dublin, Dublin, Ireland

A: HP09 Controlling the Mechanical Response of Cellular Structures by Using Magnetic Field
L. SORRENTINO, M. AURILIA, S. IANNACE, IMCB-CNR, Portici, Napoli, Italy

A: HP10 MHz Oscillations and Switching in Polyaniline Nanocomposite Nanofibrils
J.J. LANGER, S. GOLCZAK, L. SOJKA, K. LANGER, A. Mickiewicz University at Poznan, Srem, Poland

A: HP11 Tailored Magnetic Nano Particles on Carbon Nitride Nanotubes
JUNG WOO LEE, YOON JEONG CHOI, KYUNG MIN CHOI, YEOB LEE, SAJI AUGUSTINE, RAVINDRANATH VISWAN, JEUNG KU KANG, Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea

A: HP12 Synthesis and Characterization of Porous Carbon Nitride Spheres
SE YUN KIM^{1,2}, WON HYUK SUH¹, JUNG HOON CHOI², JEUNG KU KANG², GALEN D. STUCKY¹, ¹University of California, Santa Barbara, CA, USA; ²KAIST, Daejeon, Republic of Korea

A: HP13 MOCVD Deposition of Vanadium Oxide Films with a Novel Vanadium (III) Precursor
G. CARTA, L. CROCIANI, M. NATALI, G. ROSSETTO, Istituto di Chimica Inorganica e delle Superfici, CNR, Padova, Italy

A: HP14 Novel Topological Materials Based on the Self-assembling Properties of Polyrotaxanes
C. TRAVELET¹, G. SCHLATTER¹, C. BROCHON¹, A. LAPP², D.A. IVANOV³, G. HADZIIOANNOU¹, ¹Lab. d'Ingénierie des Polymères pour les Hautes Technologies, CNRS UMR 7165, Strasbourg, France; ²Lab. Léon Brillouin, CEA Saclay, Gif-sur-Yvette, France; ³Institut de Chimie des Surfaces et Interfaces, CNRS UPR 9069, Mulhouse, France

A: HP15 pH-switchable Supramolecular "Sliding" Gels Based on Polyrotaxanes of Poly(ethyleneimine-b-ethylene Oxide-b-ethyleneimine) Block Copolymer and Cyclodextrin: Synthesis and Swelling Behaviour
K. KARAKY, C. BROCHON, G. SCHLATTER, G. HADZIIOANNOU, Laboratoire d'Ingénierie des Polymères pour les Hautes Technologies, CNRS, UMR 7165, Strasbourg Cedex, France

A: HP16 Multifunctional Wear and Corrosion Resistant Decorative Nanostructured Carbon-base Coatings
F. CERNY, J. GUROVIC, V. JECH, S. KONVICKOVA, Czech Technical University, Prague, Czech Republic

A: HP17 Magnetic Properties of Ultrafine Non-interacting γ -Fe₂O₃ Nanoparticles Dispersed in a Silica Matrix
V. SPASOJEVIC¹, V. KUSIGERSKI¹, M. TADIC¹, D. MARKOVIC¹, I. MILOSEVIC², M. PEROVIC¹, A. MRAKOVIC¹, ¹Institute of Nuclear Sciences "Vinca", Belgrade, Serbia; ²Centre de Recherche sur la Matière Divisée, UMR 6619, CNRS-Université d'Orléans, Orléans Cedex, France

Special Session A-9

Recent Development in Electrical Writable Organic Memory Devices

A-9: P52 Fabrication and Characterisation of MIS Organic Memory Devices

M.F. MABROOK, D. KOLB, C. PEARSON, D.A. ZEZE, M.C. PETTY, University of Durham, Durham, UK

A-9: P53 Gold Nanoparticle Based Electrically Rewritable Polymer Memory Devices

D.C. PRIME, S. PAUL, De Montfort University, Leicester, UK

A-9: P54 Electrically Re-writable Non-volatile Memory Device - Using a Blend of Sea Salt and Polymer

I. SALAORU, S. PAUL, De Montfort University, Leicester, UK

A-9: P55 Effect of Varying Memory Device Architectures on the Electrical Properties of P(VDF/TrFE) (72/28) Copolymer Thin Film

CHANG WOO CHOI, Korea High Tech Textile Research Institute (KOTERI), Gyeonggi-do, South Korea; A. ANAND PRABU, SUN YOON, KAP JIN KIM, Kyung Hee University, Gyeonggi-do, South Korea

Focused Session A-10

State-of-the-art Research and Application of SMAs Technologies

A-10.1: P57 Magnetic Properties and Microstructures of Rapidly Solidified FePd Alloy Ribbons

YOICHI KISHI, ZENJIRO YAJIMA, Kanazawa Institute of Technology, Japan; TEIKO OKAZAKI, YASUBUMI FURUYA, Hirosaki University, Japan; M. WUTTIG, University of Maryland, USA

A-10.1: P59 Influence of Substrate Temperature on Texture for TiNi Sputtered Films

NORIAKI IKENAGA, YOICHI KISHI, ZENJIROYAJIMA, NORIYUKI SAKUDO, Kanazawa Institute of Technology, Hakusan, Ishikawa, Japan

A-10.2: P60 Shape Recovery and ϵ Martensite to Austenite Transformation in a Fe₂₉Mn₇Si₅Cr Shape Memory Alloy

N. VAN CAENEGEM¹, K. VERBEKEN^{1,2}, R. PETROV¹, N.M. VAN DER PERS³, Y. HOUBAERT¹, ¹Ghent University, Ghent, Belgium; ²Max-Planck-Institut für Eisenforschung, Düsseldorf, Germany; ³Delft University of Technology, Delft, The Netherlands

A-10.2: P62 The Influence of Thermomechanical Treatment on Transformation Temperatures of Cu-Al-Ni Shape Memory Alloys

A.A.M. TADEU, C.R.V. ANA, J.G.L. SEVERINO, M.G. RODINEI, Federal University of Paraíba, Joao Pessoa, Paraíba, Brazil

A-10.2: P63 Pseudoelasticity of Cu-13.8Al-Ni Alloys Containing V and Nb

M.G. RODINEI, C.R.V. ANA, J.G.L. SEVERINO, A.A.M. TADEU, Federal University of Paraíba, Joao Pessoa, Paraíba, Brazil

A-10.2: P64 Multi-stage Martensitic Transformations in Ti - 50.0 at.% Ni Alloy Induced by Thermal Cycles

S. BELYAEV, N. RESNINA, Saint-Petersburg State University, Saint-Petersburg, Russia

A-10.2: P65 Dynamic and Static Displacements of Atoms in B2-phase of TiNi Alloy

V.M. GUNDYREV, V.I. ZEL'DOVICH, Institute of Metal Physics, Ural Division of Russian Academy of Sciences, Ekaterinburg, Russia

A-10.3: P67 On Functional Behavior of Strain-aged TiNi Alloy

E.P. RYKLINA, S.D. PROKOSHKIN, A.A. CHERNAVINA, N.N. PEREVOSHCHIKOVA, Moscow Institute of Steel and Alloys, Moscow, Russia

A-10.5: P71 Fatigue Behavior of Ti-Ni Superelastic Component for Lumbago Prevent Apron

KAZUHIRO KITAMURA, Nagano College of Technology, Nagano, Japan

A-10.5: P72 Generation and Advantages of Initial Tension in SMA Coil Spring

KWANG KOO JEE, J.H. HAN, Y. B. KIM, Korea Institute of Science and Technology, Seoul, Korea; D.H. LEE, International Metal Institute, Gyeonggi, Korea; W.Y. JANG, Chosun University, Gwangju, Korea

A-10: HP01 Shape Memory Behavior in Some (Ti,Zr,Hf)50(Ni,Cu)50 Alloys Elaborated by Glass Devitrification (Ribbons)

V. KOLOMYTSEV, M. BABANLY, A. PASKO, A SHPAK, T. SYCH, Institute of Metal Physics NASU, Kiev, Ukraine; P. OCHIN, ICMPE CNRS, Vitry sur Seine, France; Ph. VERMAUT, R. PORTIER, ENSCP, Paris, France; E. CESARI, UIB, Palma de Mallorca, Spain

Focused Session A-11

Smart Textiles

A-11.1: P73 PVDF Nanoweb Touch Sensors Prepared Using the Electro-spinning Process for Smart Apparels Applications

SUN YOON, S. RAMASUNDARAM, KAP JIN KIM, Kyung Hee University, Yongin-si, South Korea

A-11.1: P74 A Novel Method to Produce Durable Water Repellent Cotton

S. TRAGOONWICHIAN, N. YANUMET, Chulalongkorn University, Bangkok, Thailand; E.A. O'REAR, University of Oklahoma, Oklahoma, USA

A-11.1: P75 Production of Flame Retardant Cotton Fabric by Thin Film Coating

A. SIRIVIRIYANUN¹, E.A. O'REAR², N. YANUMET¹, ¹Chulalong-korn University, Bangkok, Thailand; ²University of Oklahoma, Norman, Oklahoma, USA

A-11.2: P76 Contributions Regarding Convergent Systems of Monitoring Mobile Personalized Information

E. CARPUS, A. DOROGAN, R. SCARLAT, INC DTP, Bucharest, Romania; M. IGNAT, INC DIE-CA, Bucharest, Romania; G. ONOSE; UMF, Bucharest, Romania

A-11: HP01 Electrical Conductive Composite-filaments

L. JIMÉNEZ¹, A.M. ROCHA², I. ARANBERRI¹, J.A. COVAS², A.P. CATARINO², ¹Gaiker Technological Center, Zamudio, Spain; ²Universidade do Minho, Guimarães, Portugal

A-11: HP02 Molecular Encapsulation of Textiles

B. VONCINA, S. KRESEVIC VRAS, V. VIVOD, D. JAUSOVEC, University of Maribor, Maribor, Slovenia

A-11: HP03 Functional Properties of Electroless Silver Plated Cotton Fabric via Low-temperature Plasma Pre-treatment

S.Q. JIANG, X.M. TAO, C.W.M. YUEN, C.W. KAN, L. ZHANG, P.S.R. CHOI,
The Hong Kong Polytechnic University, Hong Kong, China

Focused Session A-12
A joint Session with Symposium E
**Artificial Muscle Actuators Using
Electroactive Polymers**

A-12.1: P77 Elastomeric Conductor-insulator Composite as Improved Actuator Material

M. MOLBERG^{1,2}, D.M. OPRIS¹, C. LÖWE¹, F.A. NÜESCH¹; C.G. PLUMMER²,
Y. LETERRIER², ¹Empa, Swiss Federal Laboratories for Materials Testing and
Research, Dübendorf, ZH, Switzerland; ²EPFL, École Polytechnique Fédéral
de Lausanne, Lausanne, VD, Switzerland

A-12.1: P78 A Co-axial Dielectric Elastomer Actuator

G. KOFOD, H. STOYANOV, R. GERHARD, University of Potsdam, Potsdam,
Germany

A-12.1: P79 A Closer Look at the Polyacrylamide Microfibers for Natural-Like Artificial Muscle Fabrication

M. BASSIL, M. EL TAHCHI, J. DAVENAS, Lebanese University, Lebanon,
and Université Claude Bernard - Lyon I, Villeurbanne, France

A-12: HP01 Ionic Polymer-Metal Composite Actuator Behaviour in Two Novel Configurations

M. KHAZRAVI, A. DEHGHANI, University of Leeds, Leeds, UK

SYMPOSIUM B
SMART OPTICS

B-1.1: P81 Electrochromic Nickel Oxide-based Thin Films Deposited by Chemical Bath

A. MENDOZA-GALVAN, M.A. VIDALES-HURTADO, Cinvestav, Queretaro,
Qro., Mexico

B-1.1: P82 WO₃ Thin Films Active in the Infrared Region

K. SAUVET^{1,2}, L. SAUQUES², J. PERRIERE³, O. DURAND⁴, J-B. LEDEUIL⁵,
D. GONBEAU⁵, A. ROUGIER¹, ¹Laboratoire de Réactivité et Chimie des
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Arcueil cedex, France; ³Université Paris 6, Paris, France; ⁴UMR-FOTON,
Rennes, France; ⁵LCTPCM, UMR 5624, Pau Cedex, France

B-1.1: P83 Acidochromic and Solvatochromic Fluorophores

H. DETERT, S. GLANG, J. PREISS, V. SCHMITT, Johannes Gutenberg
University Mainz, Mainz, Germany

B-1.2: P84 Differences in Nonlinear Mesoscopical Magnetic Interactions between Achiral and Chiral Nitroxyl Radical Liquid crystals

YOSHIKI UCHIDA¹, RUI TAMURA¹, NAOHIKO IKUMA¹, SATOSHI
SHIMONO¹, NODA YOHEI¹, JUN YAMAUCHI¹, YOSHIO AOKI², HIROYUKI
NOHIRA², ¹Kyoto University, Kyoto, Japan; ²Saitama University, Saitama
Japan

B-1.3: P85 Study of Stimulated Luminescent Processes in Beta Irradiated SrAl₂O₄: Eu²⁺, Dy³⁺

M. PEDROZA-MONTERO¹, B. CASTANEDA¹, O. ARELLANO-TÁNORI¹, R. MELÉNDREZ¹, V. CHERNOV¹, W.M. YEN², M. BARBOZA-FLORES¹,
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B-1.3: P86 Optical and Structural Characterization of Erbium-doped Ion-implanted Tellurite Glasses for Active Integrated Optical Devices

S. BERNESCHI¹, M. BRENCI¹, G. NUNZI CONTI^{1,2}, S. PELLI¹, G.C. RIGHINI^{1,3}, M. BETTINELLI⁴, A. SPEGHINI⁴, I. BÁNYÁSZ⁵, M. FRIED⁶, N.Q. KHANH⁶, F. PÁSZTI⁷, A. WATTERICH⁵, A. LETO^{8,9}, G. PEZZOTTI⁸, A.A. PORPORATI^{8,9},
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B-1.3: P88 Lanthanide-organic Frameworks: Structure, Spectroscopy Studies

M.O. RODRIGUES¹, F.A.A. PAZ², R.O. FREIRE¹, G.F. DE SÁ¹, A. GALEMBECK¹, S. ALVES Jr.¹,
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B-1.5: P91 Raman Scattering on Quadrupolar Vibrational Modes of Spherical Nanoparticles

D. RISTIC, M. IVANDA, K. FURIC, Ruder Boskovic Institute, Zagreb, Croatia; M. MONTAGNA, Università di Trento and INFM, Povo, Trento, Italy; M. FERRARI, Istituto di Fotonica e Nanotecnologie, Trento, Italy; G.C. RIGHINI, IFAC - CNR, Firenze, Italy

B-2.1: P93 Characterization of Brightness of ZnS Electroluminescent Device with Dielectric Materials of SOG or TEOS

SUNG MIN PARK, MUN JA KIM, JIN-YOUNG KIM, JI-BEOM YOO, SungKyunKwan University, Suwon, Korea; SANG HYUN PARK, Samsung Advanced Institute of Technology, Korea

B-2.1: P95 Humidity Influence on Gas-sensing Characteristics of Ammonia Sensor Films

M.V. CHUPRIN, A.G. BORISOV, O.M. IVANOVA, S.A. KRUTOVERTSEV, JSC "Practic-NC", Zelenograd, Moscow, Russia

B: HP01 Accurate, Fully Vectorial Computer Model of the Acousto-optical Bragg Diffraction

G. MIHAJLIK, P. MAÁK, A. BARÓCSI, P. RICHTER, Budapest University of Technology and Economics, Budapest, Hungary

B: HP02 Experimental and Theoretical Examination of the Phase Transfer from the Acoustic to Optical Waves during Strong Anisotropic Bragg Diffraction in Acousto-optic Devices

M. VERESS, P. MAÁK, P. RICHTER, Budapest University of Technology and Economics, Budapest, Hungary

B: HP03 Development of Cavity Mirror Enhanced Raman Spectroscopy (CMERS)

TOSHIHIRO ONA, SHUICHI MURAKAMI, Kyushu University, Fukuoka, Japan

B: HP04 New Magnetron Sputtered Stainless Steel Nitride Cermet Solar Absorber Coatings

REI-CHENG JUANG, YONG-JIN YE, SHIAU-WEI CHANG, WEN-CHIEN CHEN, Industrial Technology Research Institute, Hsinchu, Taiwan

B: HP05 Hybrid Electrochromic-liquid Crystal Materials for Applications in Electrooptical Devices

A. VINALES, C. POZO-GONZALO, J.A. POMPOSO, H. GRANDE, CIDETEC-Centre for Electrochem. Technologies, San Sebastian, Spain

B: HP06 Light-controlled Partitioning of Spiropyran between Polar and Non-polar Solvents

C. BRACKEN, A. RADU, M. O'TOOLE, M. VASQUEZ, D. DIAMOND, Dublin City University, Dublin, Ireland

SYMPOSIUM C
EMBODYING INTELLIGENCE IN
STRUCTURES AND INTEGRATED
SYSTEMS

C-1: P97 A Self-sensing Method for IPMC Actuator

BYUNG-GEUN KO, HYOK-CHON KWON, SONGJUN LEE, Hanyang University, South Korea

C-1: P101 Structure Formation and Strengthening of Hot Deformed Nitrogen-Containing Steels

V.G. PROKOSHKINA, L.M. KAPUTKINA, A.G. SVYAZHIN, Moscow Institute of Steel and Alloys, Moscow, Russia; J. SIWKA, Czestochowa University of Technology, Czestochowa, Poland

C-2: P102 Piezoelectric Sensor System for Structural Health Monitoring

BYUNGSOO KIM, YONGRAE ROH, Kyungpook National University, Daegu, Korea

C-3: P103 Modeling, Identification, and Semi-active Control of a Large-scale Magnetorheological Fluid Damper

A. RODRIGUEZ¹, N. IWATA², F. IKHOUANE¹, J. RODELLAR¹, ¹Universidad Politecnica de Catalunya, Barcelona, Spain; ²Kinki University, Osaka, Japan

C-3: P106 Edge to Thickness Ratio as a Predictor of Cured Shape and Load-deflection Characteristics in Cross-ply Asymmetric Composite Laminates

P. GIDDINGS, C.R. BOWEN, H.A. KIM, University of Bath, Bath, UK

C-4: P107 Wavelength Spectra of Fiber Optic Bragg Grating for Crack Opening

IL-BUM KWON, GUOHUA JIN, NAM-KWON LEE, DAE-CHEOL SEO, KRIS, Daejeon, South Korea

C-5: P110 Tunable Dielectric Resonator Antennas

A. MAHANFAR, C. MENON, K. DAHESHPOUR, R.G. VAUGHAN, A. PARAMESWARAN, Simon Fraser University Burnaby, Canada; F. CARPI, University of Pisa, Pisa, Italy

C: HP01 Embedding Intelligence for RTM Process Monitoring and Control

R. CAPONETTO, G. CICALA, G. DONGOLA, F. FILIPPINO, G. RECCA, University of Catania, Catania, Italy

C: HP02 Electroactive Pressure Sensors for Smart Structures

F. MARTINEZ, E. TYNAN, M. ARREGUI, G. OBIETA, Ikerland, Mondragon, Spain; J. AURREKOETXEA, Mondragon University, Mondragon, Spain

C: HP03 Linking the Impact Force History with Residual Mechanical Characteristics and Ndi - A Smart Way to Perform SHM in Composites

N. CONSTANTIN, St. SOROHAN, M. GAVAN, V. ANGHEL, The University "Politehnica" of Bucharest, Romania

SYMPOSIUM D
**BIOMEDICAL APPLICATIONS
OF SMART MATERIALS,
NANOTECHNOLOGY AND MICRO/
NANO ENGINEERING**

D-1: P111 **Photoluminescence Response and Particle Size Control of CdSe Quantum Dots by Wet Chemical Synthesis for Biomedical Applications**

RONG-FUH LOUH, A.C.C. CHANG, REX WANG, C.H. HSIAO, Feng Chia University, Taichung, Taiwan

D-1: P112 **Dispersion and Biofunctionalization of Singlewall Carbon Nanotubes**

C. TRIPISCIANO, E. BOROWIAK-PALEN, A. BACHMATIUK, R.J. KALENCZUK, Szczecin University of Technology, Szczecin, Poland

D-1: P113 **Interaction of Protein with Nanostructured Films of Phthalocyanines**

A.G. BORISOV, O.M. IVANOVA, S.A. KRUTOVERTSEV, JSC "Practic-NC", Zelenograd, Moscow, Russia; M.Yu. RUBTSOVA, L.G. TOMILOVA, Moscow State University, Moscow, Russia

D-3: P119 **Artificial Control of the Bacterial Cell-to-cell Communication with Autoinducer Recognition Gel**

NORIIHIRO KATO, YU OZONOE, ERI UMEBAYASHI, TOMOHIRO MOROHOSHI, TSUKASA IKEDA, Utsunomiya University, Utsunomiya, Japan

D-3: P120 **Ultrasonic Transducer for Fluid Microagitation Based on β -PVDF**

V.F. CARDOSO¹, J.G. ROCHA¹, S. LANCEROS-MENDEZ², G. MINAS¹, ¹University of Minho, Guimaraes, Portugal; ²University of Minho, Braga, Portugal

D-3: P122 **Biodosimetry of Gamma-irradiated Human Blood**

K. SANTACRUZ-GOMEZ, Departamento de Ciencias Químico-Biológicas, Hermosillo, Sonora, México; M. PEDROZA-MONTERO, R. MELENDREZ, B. CASTANEDA, D. SOTO-PUEBLA, M. BARBOZA-FLORES, Universidad de Sonora, Hermosillo, Sonora, México

D-4: P123 **Fabrication of Ti Fiber Scaffold for Biomaterial Use**

SHUNSUKE SAITO, Y. OYAKEA, T. ASAOKA, Tokyo Denki University, Saitama, Japan

D-4: P124 **Fabrication of α -TPC, HAp Functionally Graded Porous Beads**

YUJI KAJIHATA, T. GOTO, T. ASAOKA, Tokyo Denki University, Saitama, Japan; K.S. FURUKAWA, T. USHIDA, University of Tokyo, Tokyo, Japan ; T. TATEISHI, National Institute for Materials Science, Ibaraki, Japan

D-4: P125 **Addition of Surface Function to Zirconia for Biomaterial Use**

NATSUMI KOIDE, K. SUZUKI, M. TSUDA, T. ASAOKA, Tokyo Denki University, Saitama, Japan

D-5: P129 **Preparation and Characterization of Highly Water Soluble Pharmaceutical Loaded PLA Microcapsules**

D. LOCA¹, O. PUGOVICS², L. BERZINA-CIMDINA¹, J. LOCS³, ¹Riga Technical University; ²Latvian Institute of Organic Synthesis; ³Riga Biomaterials Innovation and Development Centre, Riga, Latvia

D-5: P130 **Effect of Electric Field Strength on the Diffusion of Salicylic Acid Through Polyacrylamide Hydrogels**

S. NIAMLANG, A. SIRIVAT, Chulalongkorn University, Bangkok, Thailand

D-5: P132 New Antibacterial, Antiadhesive Films Based on Layer by Layer Self Assemblies of Biodegradable PLGA/Chitosan Polymers Containing Modified Tetraetherlipids

E. DAYYOUNG, J. SITTERBERG, U. BAKOWSKY, Philipps University of Marburg, Marburg, Germany

D-6: P134 Estimate Biocompatibility and Injection-molding Processability of Ti-based Metallic Glasses for Dental Implant

JEONG-JUNG OAK, H. KIMURA, A. INOUE, Tohoku University, Sendai, Japan

D-6: P135 Bone Implant Failure Detection Through a Piezo-active Network

C.M. COSTA^{1,2}, P.F. ROCHA¹, S. LANCEROS-MENDEZ¹, S.A. FILONOVICH¹, P. ALPUIM¹, J.G. ROCHA³, C. FRIAS⁴, A. TORRES MARQUES⁴, R. SOARES⁴, C. COSTA⁴, ¹Universidade do Minho, Braga, Portugal; ²CeNTI - Centre for Nanotech. and Smart Materials, Vila Nova de Famalicão, Portugal; ³Universidade do Minho, Guimarães, Portugal; ⁴Universidade do Porto, Porto, Portugal

D-7: P136 Treatment of Ingrown Nails Using Cu-Al-Mn New Shape Memory Alloy

NOBUKO TABATA, Japanese Red Cross Sendai Hospital, Sendai, Japan; M. ISHIBASHI, Tohoku University, Sendai, Japan; T. SUETAKE, Suetake Dermatology Clinic, Sendai, Japan; T. OMORI, Y. SUTOU, R. KAINUMA, K. YAMAUCHI, K. ISHIDA, Tohoku University, Sendai, Japan

D-7: P137 Enzyme Mediated Coupling of Protein-based Bio-materials onto Wool Fibres

S. JUS^{1,2}, G.M. GUEBITZ², V. KOKOL¹, ¹University of Maribor, Maribor, Slovenia; ²Technical University of Graz, Graz, Austria

D: HP01 Development of Cell-based Quantitative Evaluation Method and Instrument on Personal Therapeutic Potential of Cancer Drugs for Apoptosis by High Precision Surface Plasmon Resonance Sensor

JUNKO SHIBATA, System Instruments, Fukuoka, Japan; ATSUSHI KOSAIHIRA, TOSHIHIRO ONA, Kyushu University, Fukuoka, Japan

D: HP02 Fabrication of a Microfluidic Device for the Detection of a Specific Biomolecule

WONJIN JEON, CHEE BURM SHIN, Ajou University, Suwon, Korea; JONGHEOP YI, Seoul National University, Korea

D: HP03 Polysiloxane Coatings on Biomedical Micro Devices: Plasma Etching and Surface Modification

D. SZMIGIEL, K. DOMAŃSKI, P. GRABIEC, Institute of Electron Technology, Warsaw, Poland

D: HP04 Thin Film Microsensor for Electrical and Optical Blood Diagnostics

R. VIGLASKY, V. TVAROZEK, Slovak University of Technology, Bratislava, Slovakia

D: HP05 Supramolecular Analogues of Poly(N,N-dimethylacrylamide) Hydrogels

P. CASUSO, I. LOINAZ, J.A. POMPOSO, H.J. GRANDE, I. ODRIOZOLA, CIDETEC Centre for Electrochemical Technologies, Donostia-San Sebastian, Spain

D: HP06 Direct Detection of Spores and Vegetative Cells with Polyaniline Nanofibrils

K. LANGER^{1,2}, P. BARCZYNSKI², J. WARCHOL³, L. ZABROCKA⁴, J.J. LANGER¹, ¹A. Mickiewicz University at Poznan, Srem, Poland; ²A. Mickiewicz University at Poznan, Poznan, Poland; ³Medical University at Poznan, Poznan, Poland; ⁴Biological Threats Identification and Countermeasure Centre of Military Institute of Hygiene and Epidemiology, Pulawy, Poland

D: HP07 Development of Metal-based Biodegradable Material with High Strength and High Stiffness

A.E. ÖRS¹, M. DIENER¹, J. BERNHARD², D. HAYEM², R. SPOLENAK¹, ¹ETH Zurich, Switzerland; ²Carag AG, Baar, Switzerland

D: HP08 **Functional Materials Based on Photoswitchable Ionogels**
R. BYRNE¹, D.R. MACFARLANE², D. DIAMOND¹, ¹Dublin City University, Dublin, Ireland; ²Monash University, Clayton, Victoria, Australia

SYMPOSIUM E

MINING SMARTNESS FROM NATURE

E-1.1: P138 **Dosing Disorder: a Classification of the Visual Effects Developed by Weevils**

J.P. VIGNERON, V. WELCH, M. RASSART, University of Namur, Namur, Belgium

E-2.1: P139 **Effective Impregnation of SiO₂ Sol-Gel Solution in Pine Wood and Following Gel Localization in Free Cell Volume**

J. LOCS, L. BERZINA-CIMDINA, D. LOCA, Riga Technical University, Riga, Latvia; A. ZHURINSH, Latvian State Institute of Wood Chemistry, Riga, Latvia

E-2.1: P140 **Giant Neotropical Beetles Show the Way to Hygrochromes Materials**

M. RASSART, J.-P. VIGNERON, LPS (FUNDP), Namur, Belgium

E-2.1: P141 **Superhydrophobic Coating of Metals Under Ambient Conditions**

I.A. LARMOUR, S.E.J. BELL, G.C. SAUNDERS, Queen's University Belfast, Northern Ireland

E-3.2: P142 **Mining Smartness from the Hydraulic System of Spiders: a Bioinspired Actuator for Advanced Applications**

C. LIRA, University of Bristol, UK; C. MENON, K. KIANFAR, M. MANI, Simon Fraser University, Canada

E-4.2: P143 **Multi-UUVs Team Formation Control by a Behaviour-based Method with Fuzzy Logic Adapters**

YAN HOU, R. ALLEN, University of Southampton, Southampton, UK

E-4.2: P144 **An Underwater Biomimetic Jellyfish Robot by Using IPMC**

SEONG WON YEOM, I.K. OH, Chonnam National University, Gwang-ju, Republic of Korea

E-4.3: P145 **Nano and Micromanipulators Based on Magnetic Bacterium**

M. IGNAT, G. ZARNESCU, National Institute of Electrical Engineering Researches-Advanced Researches, Bucharest, Romania

E: HP01 **The Cuttlefish Buoyancy Tank: A One Dimensionally Ordered, Porous Calcium Carbonate Mesocrystal**

J. SCHNEIDER, E. GRISSHABER, I. KAISER-BISCHOFF, C. MERKEL, W.W. SCHMAHL, LMU-Munich, Munich, Germany

POSTER DESMOUNTING

*(after Poster Discussion 2
or on Friday 13, morning)*

Conference Tours

CATANIA & RIVIERA

Monday June 9, afternoon

Transfer by motor coach to Catania downtown, to visit its beautiful baroque centre, rebuilt after destruction caused by the Volcano. Walking tour including Cathedral square, University and the enchanting Via Crociferi with its churches and monasteries.

Proceed to the "Riviera dei Ciclopi" for a panoramic tour along the coast line with its little fishermen villages.



Bellini Theatre in Catania



"Riviera dei Ciclopi"

Bus departures from Congress Center: 15.30. Back to the hotel: 20.00.

The participation fee (20 Euro) includes transportation and English speaking guide.

SYRACUSE

Tuesday June 10, full day

Transfer by motor coach to Syracuse - one of the most important archeological sites in the world. Its history is the history of the Mediterranean civilization, and not only. Guided walking tour of the little Ortigia island (the heart of the town), the old part of new town with the Cathedral, the Aretusa Fountain, the Temple of Apollo.

Lunch in a local restaurant.

After lunch transfer to the archeological park of Neapolis to have a guided visit of the Latomie, Greek theatre, Roman amfitheatre, the Ear of Dyonisus and the altar of Hieron.



Remains of Sicily's most ancient temple dedicated to Apollo and Artemis

Bus departures from Congress Center: 9.30. Back to the hotel: about 20.00.

The participation fee (65 Euro) includes transportation, entrance fees, English speaking hostess and guide, lunch.

TAORMINA

Wednesday June 11, afternoon

For at least a century, the name of Taormina has been written in the Annals of international tourism, and each year its fame is renewed by the beautiful festivals which are held there. Taormina is built on one of the terraces of Monte Tauro at an average height of 250 m. It was a Siceliot city ("polis") whose origins (358 B.C.) are connected with "Naxos" the first Greek colony founded in Sicily.

Transfer by motor coach to Taormina, then downtown is reached by elevators (Taormina is a very little village with narrow streets, where access is forbidden to big vehicles). Free walking visit of the town. Time at leisure to have shopping in the main *Corso Umberto* street, and stroll in the narrow street and the magnificent public garden.



Cape Taormina

Bus departures from Congress Center: 15.00. Back to the hotel: about 20.00.

The participation fee (25 Euro) includes transportation and English speaking hostess.

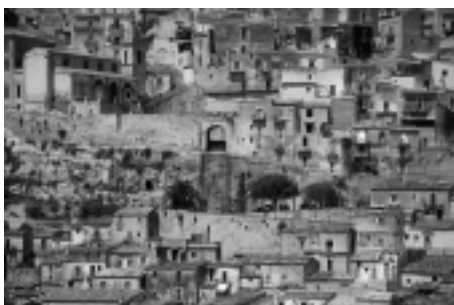
RAGUSA IBLA & MODICA

Thursday June 12, full day

Transfer by motor coach to Ragusa and walking visit to Ragusa Ibla. With its medieval remembrances and the very elegant Baroque palaces and churches, Ibla constitutes a Ragusa district extremely rich in glamour and history.

Lunch in Ragusa, then departure to Modica.

Placed in the Southern area of Iblei mountains, Modica is among the most interesting towns in the Ragusa district. Rebuilt after the 1613 and 1693 heavy earthquakes, what makes this town unique and fascinating is, first of all, its Baroque fashion and the number of picturesque lanes, rich of old shops, workshops and beautiful palaces. Modica is also renowned for its traditional chocolate production and related international festival.



Ragusa Ibla



Modica - The Cathedral

Bus departures from Congress Center: 9.30. Back to the hotel: about 20.00.

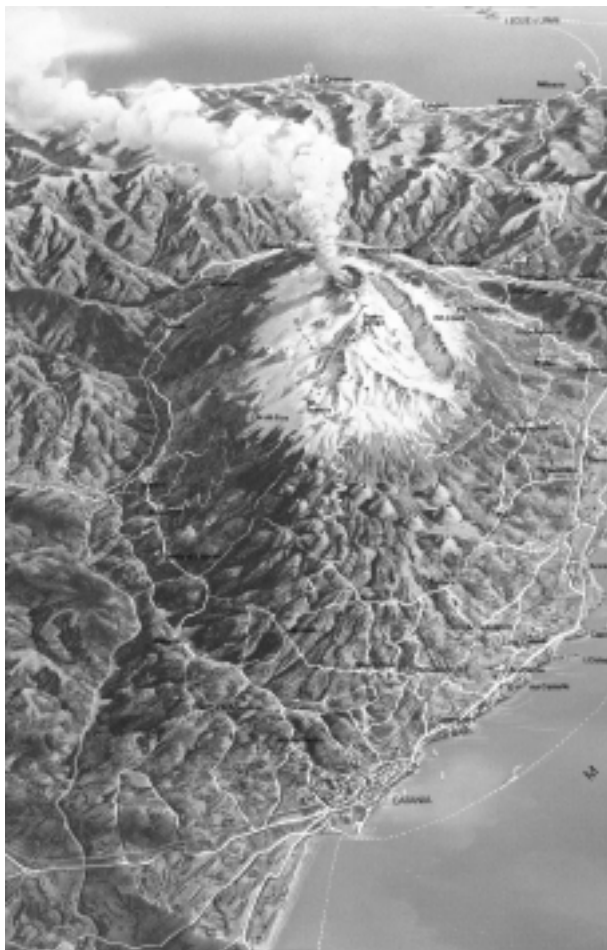
The participation fee (65 Euro) includes transportation, English speaking guide and lunch.

ETNA VOLCANO

Friday June 13, afternoon

Departure by motor coach to Mount Etna direction, the biggest active volcano in Europe, proceeding to the foothills of the volcano, through wine yards, lemon groves and old lava flows.

It will be possible to reach, by bus, an altitude of 1900 meters on the sea level, where 2001 and 2002 eruptions arrived and crossed the road. Time at leisure to have a walk on the lava flow and around the mouth of one of the "Silvestri Craters". Then, transfer to Restaurant "Villa Mirador", seat for the "Conference Dinner".



Bus departures: 16.30 from each EtnaCoast hotel. Back to the hotel: about 23.30.

The participation fee (70 Euro) includes transportation, English speaking hostess and Conference Dinner.

Post Conference Tour

AGRIGENTO - "VALLE DEI TEMPLI"

Saturday June 14, full day

In the "Valle dei Templi", near Agrigento (about 220 km from Acireale), Graecism triumphs in superb monuments. The "archaeological walk", that can be covered also by car, arrives at the "Hill of the Temples", 120 m above the sea level, on whose summit rises the solitary, majestic temple of Juno Lacinia. No far away is the so-called temple of the Concordia, which is the best preserved of the ancient temples. Passing by the remains of a huge Christian-Byzantine necropolis, one arrives to Hercule's temple, perhaps the Agrigento's most ancient temple (end of 6th century B.C.). Beyond what is known as Terone's tomb there are the chaotic ruins of the Temple of Jove the Olimpian, the Temple of Castor and Pollux, and the vast Ellenistic-Roman quarter (4th cent. B.C.) where the streets, ruins of bourgeois houses (often sumptuously mosaicked) and shops give an accurate idea of the town-planning of that period.

Transfer by motor coach to Agrigento. Crossing the idillic scenary of the centre of the Isle and enjoying the characteristic landscape, guests will reach the best preserved monumental archeological Greek site in Sicily. Walking visit of the Temples Valley to admire the ruins of Juno, Concordia, Eracles, Zeus and Dioscuri Temples. Lunch in local restaurant. Visit to the Cathedral.



Agrigento - Temple erected in honour of Hera (Juno)

Bus departures from each EtnaCoast hotel: 9.00. Back to the hotel: about 20.00.

The participation fee (80 Euro) includes transportation, entrance fees, English speaking hostess, English speaking local guide, and lunch.