Scientific Program

14 November 2005

Aerospace, Defence and National Security

9.30 – 10.30 ***Registration***

Session 1 *– Chair: M. Marchetti (Univ. Roma La Sapienza, Italy)*

10.30 – 11.00 *Introduction/tutorial:* Micro–nano technologies for large space structures & systems *M. Pimprikar (CANEUS, Canada)*

11.00 – 11.20 Basic and Applied Microbial Investigation on Space *F. Canganella (Univ. Tuscia, Viterbo, Italy))*

11.20 – 11.40 Radiation curing of epoxy resins in the presence of engineering thermoplastics: a way to produce nanostructured matrices for aerospace composites *G. Spadaro (Univ. Palermo, Italy)*

11.40 – 12.00 Definition of potential applications of nanotechnologies in the aerospace field *F. Fossati (Alcatel Alenia Space, Torino, Italy)*

12.00 – 12.20 On the strength of the nanotube-based space elevator cable *N. Pugno (Polito,Torino, Italy)*

12.20 – 12.40 In planta produced vaccines *E. Albertini (Univ. Perugia, Italy)*

12.40 – 13.00 Finmeccanica nanotechnology studies and developments *C. Falessi (SELEX–SI, Italy)*

13.00 – 14.00 *Lunch break*

Session 2 – *Chair. M. Pimprikar (CANEUS, Canada)*

14.00 – 14.20	FILAS and the Aerospace Technological District *G. Lancia (FILAS, Roma, Italy)*
14.20 – 14.40	Small devices big changes: to improve human life *M.A. Bianchi (Univ. Roma–Policl. "Umberto I"–Alcatel Alenia Space, Italy)*
14.40 – 15.00	Nanoparticles for solid rocket propellants *L. Galfetti (Polimi, Milano, Italy)*
15.00 – 15.20	Nanostructured surfaces of aluminium alloys for fabricating adhesive bonded joints *C. Spadaro (Univ. Palermo, Italy)*
15.20 – 15.40	Design of Advanced Fluorescence Nano-Biosensors for Defense and National Security *S. D'Auria (CNR, Napoli, Italy)*
15.40 – 16.00	Vega launch system *M. Lopez (ESA–ESRIN, Frascati, Italy*
16.00 – 16.30	*Coffee break*
16.30 – 16.50	Present situation and forecasts of nanotechnology in Italy and Europe *E. Mantovani (NANOTEC IT, Italy)*
16.50 – 17.10	Composite metallic materials for energy transport *E. Orientale (3M, Italy)*
17.10 – 17.30	Electromagnetic/Photonic Band-Gap Structures in the resonance domain *G. Schettini (Univ. Roma Tre, Italy)*
17.30 – 17.50	Disposable screen printed electrodes assembled as biosensors and immunosensors for rapid detection of nerve agents and pathogenic bacteria *G. Palleschi (Univ. Roma Tor Vergata, Italy)*
17.50 – 18.10	Temperature dependence of the dynamics of confined water absorbed in a polymer electrolyte fuel cell membrane at low hydration level *A. Paciaroni (Univ. Perugia, Italy)*
18.10 – 18.30	Description and possible applications of two different tabletop laser systems *P. Ciuffa (Elettronica S.p.A., Roma, Italy)*
18.30 – 18.50	Porphyrins based nanostructures for sensing applications *A. D'Amico (Univ. Roma Tor Vergata, Italy)*
18.50 – 19.50	**POSTER SESSION** *(permanent poster session)*
19.30	***WELCOME COCKTAIL***

15 November 2005

Electronics, Materials, Characterizations

***Session 3** – Chair: W.C. Oliver (MTS Systems, Minneapolis MN, USA)*

9.00 – 9.30	Neutron spectroscopic characterization of fullerene networks, nanoparticles and nanotubes *H. Schober (Institut Laue Langevin, Grenoble, France)*
9.30 – 9.50	Point Defect Aggregation and Metallic Colloid Formation in Ionic Solids *A. Popov (Riga University, Latvia)*
9.50 – 10.10	Growth process and some optical properties of nanoparticles copper sulfide, formed in polymer matrix *M. Muradov (Baku State University, Azerbajan)*
10.10 – 10.30	Bandgap Renormalization of Nano-Wires in GW approximation *K. Nozari (University of Mazandaran, Iran)*
10.30 – 10.50	Metamaterial sub–wavelength absorbers *F. Bilotti (Univ. Roma Tre, Italy)*
10.50 – 11.20	*Coffee break*
11.20 – 11.40	Towards Integrated Organic Optoelectronics: Status and Perspectives of Organic Light-Emitting Transistors *M. Muccini (CNR-ISMN, Bologna, Italy)*
11.40 – 12.00	Microwave Irradiation an Alternative Source for Conventional Annealing: A Study of pure TiO_2, $NiTiO_3$, $CdTiO_3$ Thin Films by a Sol-gel Process for Electronic Applications *Ratna Phani Ayalasomayajula (CASTI, L'Aquila, Italy)*
12.00 – 12.20	Intraband absorption in semiconductor quantum wire with convex bottom in magnetic field *A. Manaselyan (Yerevan State University, Armenia)*
12.20 – 12.40	Electronic Instabilities in Small-Diameter Carbon Nanotubes *E. Perfetto (CSIC, Madrid, Spain and INFN, Italy)*
12.40 – 13.00	Magnetic field influence on spectrum rearrangement and spin transition of coupled quantum dots *N. Kaputkina (Moscow Institute for Steel and Alloys Russia)*
13.00 – 14.00	*Lunch break*

Session 4 *– Chair: H. Schober (Institut Laue Langevin, Grenoble, France)*

14.00 – 15.00	On the mechanics of size scale plasticity relevant to the design of micro and nanodevices *H. Espinosa (Northwestern University, USA)*
15.00 – 15.20	Instrumented indentation and viscoelastic materials *W.C. Oliver (MTS Systems, Minneapolis MN, USA)*
15.20 – 15.40	Relating morphology to nanoscale mechanical properties by AFM nanoindentation *S. Piccarolo (Univ. Palermo)*
15.40 – 16.00	Nanoindentation characterization of advanced ceramics *S. Guicciardi (ISTEC–CNR, Faenza, Italy)*
16.00 – 16.30	*Coffee break*
16.30 – 16.50	Recent developments in micro and nanotribology *M. Ciavarella (Poli Bari, Italy)*
16.50 – 17.10	Nano imaging of mechanical properties *M. Fajifrowski (MTS Systems, France)*
17.10 – 18.10	Mechanical properties of three MEMS materials – SiC, ultrananocrystalline diamond and hydrogen–free tetrahedral amorphous carbon (Ta–C) *H. Espinosa (Northwestern University, USA)*
18.10 – 18.30	Resonance of curved nanowires *L. Calabri (Univ. Firenze, Italy)*
18.30 – 18.50	Simulation and characterization of transport properties of oxide nanodevices *V. Dallacasa (Verona Univ., Italy)*
20.00	*Gala Dinner*

16 November 2005

Biomedicine

***Session 5** – Chair: S. Bellucci (INFN, Laboratori Nazionali di Frascati, Italy)*

9.00 – 9.30	*Introduction/tutorial:* Nanoparticle toxicity and biological cell response *B. Panessa–Warren (Brookhaven Nat. Lab, USA)*
9.30 – 9.50	Nanoparticle – hemoglobin cross–talk specific protein unfolding *P. Sen (Jawaharlal Nehru University, New Delhi, India)*
9.50 – 10.10	Enhanced antibacterial properties of carbon nanotubes as additives in Fe^{+3} doped TiO_2 thin films deposited by sol-gel dip coating process *S. Santucci (CASTI, L'Aquila, Italy)*
10.10 – 10.30	Nanofabrication for materials and biomedical applications *J.B. Warren (Brookhaven Nat. Lab, USA)*
10.30 – 10.50	Intellectual property and patents in nanoscience *C. Germinario (S.I.B., Roma, Italy)*
10.50 – 11.20	*Coffee break*
11.20 – 11.50	Smart nanostructured materials for drug delivery *M. Monduzzi (Univ. Cagliari, Italy)*
11.50 – 12.10	Advances in functionalized surfaces for BioMEMS applications: “lab-on-a-cell” chips and “phage-displayed” detection microsystems *S. Carnazza (Univ. Messina, Italy)*
12.10 – 12.30	Nanostructured soft composites: materials for an interactive interface between Human and the Environment *C. Dispenza (Univ. Palermo, Italy)*
12.30 – 12.50	Development of an Integrated MEMS-based DNA Analysis Chip with Active Flow Control Components *D. Palmieri (D’Appolonia S.p.A., Rome, Italy)*
12.50 – 13.10	Sponsor’s presentation
13.10 – 14.10	***Lunch break***

Session 6 *– Chair: A. Bergamaschi (Univ. Roma Tor Vergata, Italy)*

14.10 – 14.40 Recent results on organic nanoparticles in biological media
B. Fubini (Univ. Torino, Italy)

14.40 – 15.00 Composite nanomaterials as platforms for medical and biotechnological applications
S. Bellucci (INFN–Laboratori Nazionali di Frascati)

15.00– 15.20 S–phase pausing and sensitisation to apoptosis of tumor cells by carbon nanotubes
L. Ghibelli (Univ. Roma Tor Vergata, Italy)

15.20– 15.40 Interaction between genes ACP, Zap–70 kinase and nanoparticles
N. Lucarini (Univ. Camerino, Italy)

15.40 – 16.00 Carbon nanotubes cytotoxicity
M. Bottini (Burnham Inst., USA)

16.00 – 16.30 *Coffee break*

16.30 – 17.00 Occupational impact of nanotechnologies
A. Magrini (Univ. Roma Tor Vergata, Italy)

17.00 – 17.20 Impact of micro–and nano–beams on medical and biological applications at accelerators
V. Biryukov (IHEP–Protvino, Russia)

17.20 – 17.40 Propagation of a solute wave in a curved artery
G. Pontrelli (CNR, Roma, Italy)

17.40 – 18.00 Reactivity of bioreactors: from the self-reproduction of submi-crometric vesicles to protein expression within compartments
P. Stano (E. Fermi Research Center & Univ. Roma Tre, Italy)