

International Conference
on
NANOMATERIALS AND NANOTECHNOLOGIES
(NN 2003)

SCIENTIFIC PROGRAM

Location: The Creta Maris Hotel, Hersonessos, Crete, Greece

Dates: August 30, 2003 – September 6, 2003

Web site: <http://www.ipme.ru/ipme/conf/NN2003/>

Supported by:

Advanced Study Center (Russia)



**European Office of Aerospace Research and Development,
Air Force Office of Scientific Research (USA)
Air Force Research Laboratory (USA)**

National Science Foundation (USA)

University of Central Florida (USA)

**International Conference on
NANOMATERIALS AND NANOTECHNOLOGIES (NN 2003),
Crete, Greece; August 30 - September 6, 2003**

Web-site: <http://www.ipme.ru/ipme/conf/NN2003/>

The objective of this Conference is to highlight current and future multidisciplinary research on nanostructured materials and development of nanotechnologies with the primary focus on reinforce of connection between the fundamental science, engineering and commercialization of nanostructures; between universities, governmental laboratories, academic institutions, private research sector and industry. This Conference aims to assess the current status and to identify future priority directions of fabrication, research, design and applications of nanocomposites, carbon nanotubes, self-assembled supramolecules, nanostructured bulk solids, films and coatings, quantum dots and wires. Particular emphasis will be placed on developing close interactions among scientists and engineers from Asia, Europe, and North America and fostering future transdisciplinary and multi-institutional collaboration in this new and rapidly growing area.

Sponsors: Advanced Study Center (Russia); European Office of Aerospace Research and Development, Air Force Office of Scientific Research (USA), U.S. Air Force Research Laboratory; National Science Foundation (USA); University of Central Florida (USA)

Conference chair: **I.A.Ovid'ko** (Russian Academy of Sciences)

International Organizing Committee: **E.C. Aifantis** (Aristotle University of Thessaloniki, Greece); **M.-I. Baraton** (University of Limoges, France); **G.-M. Chow** (National University of Singapore, Singapore); **M.Yu. Gutkin** (Russian Academy of Sciences); **J.Th.M. De Hosson** (University of Groningen, The Netherlands); **G. Kiriakidis** (IESL, FORTH, Greece); **E. Lavernia** (University of California, Davis, USA); **C.S. Pande** (Naval Research Laboratory, USA); **H.-E. Schaefer** (Stuttgart University, Germany); **S. Seal** (University of Central Florida, USA); **R.D. Shull** (National Institute of Standards and Technology, USA); **G. Skandan** (Nanopowder Enterprises Inc., USA); **V. Teixeira** (University of Minho, Portugal); **T. Tsakalacos** (Rutgers University, USA)

Location: Creta Maris Hotel, de-luxe (five-star) hotel situated on the north coast of Crete, 25 km east of Heraklion airport on its own golden beach.

NN 2003 Proceedings will be published in **Reviews on Advanced Materials Science** (RAMS) Journal. RAMS web-sites:
<http://www.ipme.ru/e-journals/RAMS/>
and
<http://www.ipme.nw.ru/e-journals/RAMS/>

SATURDAY, August 30, 2003

9:00 - 13:00**REGISTRATION****14:00 - 18:00****REGISTRATION****12:30 – 14:00****Organizing committee meeting****18:00 - 19:00****RECEPTION****19:00 - 19:15****Introduction by conference chair**
Ilya Ovid'ko (Russia)

SUNDAY, August 31, 2003

Registration: 8:15 – 14:00**Morning Session A1: SYNTHESIS AND PROCESSING OF NANOMATERIALS I**
(Aug. 31 9:00 – 11:00) Session Chair: M. Mayo

9:00 – 9:40

1A I1

METALLIC AND INTERMETALLIC NANOPARTICLES,
FILAMENTS AND TREE-LIKE ASSEMBLIES PREPARED BY
LASER VAPORIZATION CONTROLLED CONDENSATION
M. Samy El-Shall (USA)

9:40 – 10:20

1A I2

SUPERHARD AND FUNCTIONAL NANOCOMPOSITES
FORMED BY SELF-ORGANIZATION IN COMPARISON WITH
HARDENING OF COATINGS BY ENERGETIC ION
BOMBARDMENT DURING THEIR DEPOSITION.
Stan Veprek (Germany)

10:20 – 11:00

1A I3

NANOSTRUCTURED BULK SOLIDS BY FIELD
ACTIVATED SINTERING
Joanna Groza (USA)

11:00 – 11:30

COFFEE-BREAK

Noonday Session A1: SYNTHESIS AND PROCESSING OF NANOMATERIALS II
(Aug. 31 11:30 – 13:10) Session Chair: C. Kutsche

- | | | |
|---------------|-------|--|
| 11:30 – 12:10 | 1A I4 | RECENT ADVANCES IN MICROWAVE PROCESSING OF NANOMATERIALS
<u>Dinesh Agrawal</u> , Jiping Cheng, Yi Fang, Mohit Jain and Ganesh Skandan (USA) |
| 12:10 – 12:30 | 1A O1 | SYNTHESIS AND CHARACTERIZATION OF SILICON NITRIDE BASED COMPOSITES CONTAINING DIFFERENT CARBON NANOSPECIES
<u>Csaba Balazsi</u> , Z. Konya, F. Weber, L. P. Biro, P. Arato (Hungary) |
| 12:30 – 12:50 | 1A O2 | POSITION AND SIZE CONTROLLED FABRICATION OF NANO-METALS AND ν SEMICONDUCTORS WITH FINE FOCUSED ELECTRON BEAM
<u>Kazuo Furuya</u> , Kazutaka Mitsuishi, Masayuki Shimojo, Masaki Takeguchi (Japan) |
| 12:50 – 13:10 | 1A O3 | TEM MICROSTRUCTURE OF NANO SIZED IRON NITRIDES FABRICATED BY CVC
Taek-Soo Kim, Chol-Jin Choi and Byong-Taek Lee (Korea) |

Evening Session A1: SYNTHESIS AND PROCESSING OF NANOMATERIALS III
(Aug. 31 17:00 – 19:00) Session Chair: S. Veprek

- | | | |
|---------------|-------|--|
| 17:00 – 17:40 | 1A I5 | NANOCRYSTALLINE M_{CrAlY} ALLOYS FOR THERMAL BARRIER COATINGS APPLICATIONS
Leonardo Ajdelsztajn (USA) |
| 17:40 – 18:20 | 1A I6 | SURFACE AND BULK EFFECTS OF NON-DEPOSITING ENERGETIC SPECIES DURING GROWTH OF BORON NITRIDE AND CARBON FILMS
S. Logothetidis (Greece) |
| 18:20 – 19:00 | 1A I7 | RECENT ADVANCES IN REDUCED MESOPOROUS OXIDES
Michel Trudeau (Hydro-Quebec Research Institute, Canada) and David Antonelli (Canada) |

Noonday Session B1: NANOMECHANICS (Aug. 31 11:30 – 13:40)
Session Chair: Yu. Mishin

- | | | |
|---------------|-------|--|
| 11:30 – 12:00 | 1B I1 | METHODS OF ELASTICITY THEORY IN SCIENCE AND TECHNOLOGY OF NANOTUBES
N.F. Morozov (Russia) |
| 12:00 – 12:40 | 1B I2 | CONTINUUM NANOMECHANICS
E.C. Aifantis (Greece) |

12:40 – 13:00	1B O1	SIMULATIONS OF NANOSIZE PARTICLES/GAS FLOW Dimitrios Lianos, <u>Shmuel Eidelman</u> and Nashat Ahmad (USA)
13:00 – 13:20	1B O2	ON THE NANOTHERMODYNAMICS OF BIMETALLIC NANOPARTICLES Miguel Jose-Yacaman (USA)
13:20 – 13:40	1B O3	EFFECT OF WORK OF ADHESION ON NANOINDENTATION <u>Ya-Pu Zhao</u> and Xinghua Shi (China)

MONDAY, September 1, 2003

Morning Session A2: INTERNATIONAL PARTNERSHIPS IN NANOSCIENCE AND NANOTECHNOLOGY (Sept. 1 9:00 – 11:00)

Session Chairs: M.-I. Baraton and G.-M. Chow

9:00 – 9:30	A2 I1	INTERNATIONAL PARTNERSHIPS IN NANOSCALE MANUFACTURING TECHNOLOGIES AND INFRASTRUCTURE Haris Doumanidis (USA)
9:30 – 10:00	A2 I2	RESEARCH ON NANOSCIENCES AND NANOTECHNOLOGIES WITHIN THE EUROPEAN UNION'S 6TH FRAMEWORK PROGRAMME R. Tomellini (Belgium)
10:00 – 10:30	A2 I3	C.Kutsche (USA)
10:30 – 11:00	Panel Discussion	INTERNATIONAL PARTNERSHIPS IN NANOSCIENCE AND NANOTECHNOLOGY
11:00 – 11:30		COFFEE-BREAK

Noonday Session A2: STRUCTURE AND PROPERTIES OF NANOMATERIALS I (Sept. 1 11:30 – 13:40) Session Chair: G. Kiriakidis

11:30 – 12:10	A2 I4	LOCAL VARIATION OF MAGNETIZATION IN NANOCRYSTALLINE ULTRA-SOFT MAGNETIC FILMS INVESTIGATED WITH LORENTZ TRANSMISSION ELECTRON MICROSCOPY AND ELECTRON HOLOGRAPHY Jeff Th.M. De Hosson (The Netherlands)
12:10 – 12:30	A2 O1	CONSTRUCTION AND CHARACTERIZATION OF THE MULTILAYER ASSEMBLY OF GOLD NANOCCLUSERS COVERED WITH FUNCTIONAL SELF-ASSEMBLED MONOLAYERS <u>Kohei Uosaki</u> , W.-B. Song, M. Okamura, T. Kondo (Japan)

12:30 – 12: 50	A2 O2	SURFACE PROPERTIES OF NANOCRYSTALLINE ALLOYS CHARACTERISED BY MOSSBAUER SPECTROMETRY Marcel Miglierini (Slovakia)
12:50 – 13:10	A2 O3	VISIBLE LIGHT EMISSION OF SI NANOPARTICLES Tsong P. Perng (Taiwan)
13:10 – 13:40	A2 I5	FULLERENE C60 UNDER SHOCK WAVE CONDITIONS Victor Postnov et al (Russia)

Evening Session A2: NANOSTRUCTURES IN BIOLOGY AND MEDICINE
(Sept. 1 17:00-19:00) Session Chair: R. Tomellini

17:00 – 17:40	A2 I6	NANOPARTICLE FOR TARGETED DRUG DELIVERY Gan Moog Chow (Singapore)
17:40 – 18:00	A2 O4	LIPOSOME STABILITY VERIFICATION BY ATOMIC FORCE MICROSCOPY E.F. de Souza, Omar Teschke (Brasil)
18:00 – 18:20	A2 O5	ROBUST NANO CLUSTER LAYERS FOR STRUCTURAL AMPLIFIED FLUORESCENCE BIOCHIPS <u>Christian Mayer</u> , Viatcheslav Matyushin (The Netherlands), Georg Bauer (Germany), Alfred Leitner, Franz Aussenegg, Thomas Schalkhammer (Austria)
18:20 – 18:40	A2 O6	CONTROL OF DNA-METAL NANOSTRUCTURE SELF-ASSEMBLY USING THE TOOLS OF MOLECULAR BIOLOGY <u>Antonios G. Kanaras</u> , Zhenxin Wang, Andrew D. Bates, Richard Cosstick and Mathias Brust (UK)
18:40 – 19:00	A2 O7	MICROBIALLY SYNTHESIZED BIOACTIVE NANOPARTICLE AND THEIR FORMULATION ACTIVE AGAINST HUMAN PATHOGENIC FUNGI. Sushil K Shahi and <u>Mamta Patra</u> (India)

Noonday Session B2: NANOTUBES I (Sept. 1 11:30 – 13:20)
Session Chair: N.F. Morozov

11:30 – 12:10	B2 I1	BUILDING AND CHARACTERIZATION OF ORGANIZED ARCHITECTURES OF CARBON NANOTUBES <u>Robert Vajtai</u> , B.Q. Wei and P.M. Ajayan (USA)
12:10 – 12:50	B2 I2	CARBON NANOTUBE ELECTRONICS AND ELECTRO-OPTICS Phaedon Avouris (USA)

12:30 – 12:50	3A O2	DEGRADATION OF NANOPARTICULATE-COATED AND UNCOATED SULFIDE-BASED CATHODOLUMINESCENT PHOSPHORS <u>Billie Abrams</u> , W.J. Thomes, J.-S. Bang, P.H. Holloway (USA)
12:50 –13:10	3A O3	NANOSTRUCTURED OXIDES AND BIO-COMPOSITES FOR ADVANCED CHEMICAL SENSORS: AN ASSESSMENT OF MICROSTRUCTURE-SENSING PROPERTY RELATIONSHIPS Pelagia Gouma (USA)
13:10-13:50	2A I4	MERGING SCIENCE AND TECHNOLOGY: A COHERENT SUM M.J. Solieau (USA)

Morning Session B3: STRUCTURE AND PROPERTIES OF NANOMATERIALS II
(Sept. 2 9:00 - 11:00) Session Chair: K. Uosaki

9:00 – 9:20	3B O1	LIMN _{2-Y} CR _Y O ₄ NANOPOWDERS SYNTHESIZED BY THE MICROWAVE-INDUCED COMBUSTION METHOD AND THEIR ELECTROCHEMICAL PROPERTIES <u>Cheng-Hsiung Lin</u> , Yen-Pei Fu and Yu-Hsiu Su (Taiwan)
9:20 – 9:40	3B O2	NANOSTRUCTURED HIGH STRENGTH MG-5%AL-X%ND ALLOYS PREPARED BY MECHANICAL ALLOYING <u>Li Lu</u> , M.O. Lai and K. Raviprasad (Singapore)
9:40 – 10:00	3B O3	PROPERTIES OF YSZ AND CeGdO NANOPOWDERS PREPARED BY TARGET EVAPORATION WITH A PULSE-REPETITIVE CO ₂ -LASER <u>Maxim G. Ivanov</u> , Yury A. Kotov, Vladimir V. Osipov, Vyacheslav V. Platonov, Oleg M. Samatov (Russia)
10:00 – 10:20	3B O4	EMISSION CHARACTERISTICS OF CARBON NANOTUBE-BASED CATHODS G.S.Bocharov, A.V.Eletskii, A.V.Korshakov (Russia)
10:20 – 10:40	3B O5	STRUCTURE CONTROL AND ITS INFLUENCE ON PHOTOACTIVITY AND PHASE TRANSFORMATION OF TiO ₂ NANO-PARTICLES <u>Ying Li</u> , Tim White, Suo Hon Lim (Singapore)
10:40 – 11:00	3B O6	EXAMINED THE GAS ABSORPTION PROPERTIES OF SINGLE WALL CARBON NANOTUBE BUNDLES BY X-RAY ABSORPTION TECHNIQUES Meng-Hung Tsai, <u>Hong-Ming Lin</u> , Wen-Li Tsai, Yeukuang Hwu (Taiwan)
11:00 – 11:30		BREAK

Morning Session B3: SYNTHESIS AND PROCESSING OF NANOMATERIALS IV
(Sept. 2 11:30 – 13:50) Session Chair: Manuel de Costa

11:30 – 12:10	3B I1	DESIGN OF PVD CERAMIC COATINGS USING NANOSTRUCTURE CONCEPT <u>Vasco Teixeira</u> , A. Portinha1, C. Nunes, A. Monteiro, N. Lima (PORTUGAL)
---------------	-------	---

12:10 – 12:30	B3 O7	PLASMA COATING OF NANOPARTICLES AND NANOTUBES <u>Donglu Shi</u> , Tony He, Wim Van Ooij (USA)
12:30 – 12:50	B3 O8	SYNTHESIS OF SI-B ALLOY NANOWIRE JUNCTIONS <u>Judy Wu</u> , S. H. Yun, A. Dibos (USA)
12:50 – 13:10	B3 O9	MAGNETIC FIELD-INDUCED GROWTH OF SINGLE-CRYSTALLINE Fe ₃ O ₄ NANOWIRES Jun Wang, <u>Qianwang Chen</u> , Chuan Zeng, San Chen (China)
13:10 – 13:30	B3 O10	COMPARISON OF FE/AL ₂ O ₃ AND FE,CO/AL ₂ O ₃ CATALYSTS USED FOR PRODUCTION OF CARBON NANOTUBES FROM ACETYLENE BY CCVD Zoltan Konya et al (Hungary)
13:30 – 13:50	B3 O11	TEMPERATURE EFFECTS ON NUCLEATION MECHANISMS OF BORON NANOWIRES <u>Sangho Yun</u> , A. Dibos and J. Z. Wu (Sweden)

EVENING SESSION (September 2): POSTER SESSION (16:00 – 19:00)

- P1 CHARACTERIZATION OF NOBLE METAL ALLOY NANOPARTICLES PREPARED BY ULTRASOUND IRRADIATION
Hiroe Takatani et al (Japan)
- P2 MICROSTRUCTURE AND MAGNETIC PROPERTIES OF ZINC FERRITE NANOPARTICLES SYNTHESIZED FROM HYDROXIDE CARBONATE PRECURSORS
Yangkyu Ahn, Eun J. Choi, Eun H. Kim (Korea)
- P3 NUMERICAL INVESTIGATION OF EQUAL CHANNEL ANGULAR EXTRUSION FOR BULK NANOSTRUCTURED MATERIALS FORMATION
Qing-Xiang Pei and C.Lu (Singapore)
- P4 NANO-CATALYTIC TIN OXIDE PARTICLES SYNTHESIZED BY LOW TEMPERATURE AQUEOUS MIXING AND DOPING (LTAMD) METHOD
- P5 NOVEL SYNTHESIZING PROCESS FOR NANOCRYSTALLINE INDIUM TIN OXIDE PARTICLES BY LOW-TEMPERATURE ONE-TIME MIXING AND OXIDATION (LOMO)
Sung-Jei Hong et al (Korea)
- P6 SYNTHESIS OF PRECURSOR-DERIVED TIC-NI BASED NANOCOMPOSITES BY DIRECT REDUCTION & CARBURIZATION PROCESSING
Xing-long Duan et al (China)
- P7 BORAZINE-SILOXANE ORGANIC/INORGANIC HYBRID POLYMER
Masami Inoue et al (Japan)
- P8 NANOBIONICS AND THE CONSTRUCTOR FOR NANOBIONICS SYSTEMS
Dmitry Leshchev (Center for Advanced Research of Saint-Petersburg State Politechnical University, Russia)

- P9 POROUS SILICON MATRIX FOR APPLICATIONS IN BIOLOGY
Anca Angelescu, Irina Kleps, Miu Mihaela, Monica Simion, Adina Bragaru, Crina Paduraru, Stefana Petrescu (Romania)
- P10 SUPERPARAMAGNETIC RELAXATION IN COBALT FERRITE NANOPARTICLES SYNTHESIZED FROM HYDROXIDE CARBONATE PRECURSORS
Eun J. Choi, Yangkyu Ahn, E.H. Kim (Korea)
- P11 THIN FILM BASED DNA DETECTION SENSOR
S. Tuukkanen, J. Virtanen, V. Hytonen, M. Kulomaa, P. Torma (Finland)
- P12 NB-BASED SUPERCONDUCTING SINGLE ELECTRON TRANSISTORS
Sorin Paraoanu, G.-S. Paraoanu, J. Toppari, A. Halvari, K. Hansen, and J. Pekola (Finland)
- P13 LOW TEMPERATURE HEAT-TREATMENT OF MAGNETIC IRON-BASED NANOPARTICLES PRODUCED BY CHEMICAL VAPOR CONDENSATION
Oleg Tolochko (Russia), C.J.Choi, B.K.Kim (Korea)
- P14 PRODUCTION OF COBALT-FERRITE COMPOUND NANOPARTICLES USING REVERSE MICELLAR SYSTEM
Ayla CALIMLI et al (TURKEY)
- P15 MAGNETOFECTION: A NOVEL METHOD TO ENHANCE RETROVIRAL VECTOR GENE TRANSDUCTION WITH MAGNETIC NANOPARTICLES
Ming-Fong Tai et al (Taiwan)
- P16 CATALYTIC EFFECT OF NANOMETER SIZED ADDITIVES ON HYDROGEN SORPTION IN NANOCRYSTALLINE MAGNESIUM-NICKEL ALLOY
Jerzy Bystrzycki, W. Darlewski (Poland)
- P17 PROCESSING AND PROPERTIES OF NANOCRYSTALLINE FeAl INTERMETALLICS
Wojciech Przetakiewicz, M. Zachman, J. Bystrzycki, Z. Bojar (Military University of Technology, Warsaw, Poland)
- P18 NANOCRYSTALLINE HYDROGEN ABSORBING MAGNESIUM-NICKEL ALLOYS
Zbigniew Bojar, J. Bystrzycki, W. Darlewski, W. Przetakiewicz (Poland)
- P19 SINGLE CRYSTAL SBN:YB /OPAL MATRIX (SiO₂):ER COMPOSITE AS A NANOPHOTONIC STRUCTURE
Samoilovich M.I., Ivleva L.I., Tsvetkov M.Yu., Samoilovich S.M., Gur'yanov A.V. (Russia)
- P20 INORGANIC v ORGANIC CRYSTALS GROWN BY SELF-ARRANGMENT OF FULLERENES
Ales Mrzel and M. Remskar (Slovenia)
- P21 ABSORPTION BAND CONTROL INDUCED BY PAI-CONJUGATED NANO-COLUMNAR OF AROMATIC POLYACETYLENES PREPARED WITH A RH COMPLEX CATALYST
Yasuteru MAWATARI, Takeyuki SONE, Yoshikazu SADAHIRO, and Masayoshi TABATA (Japan)
- P22 CONDENSATIONAL GROWTH OF NANOPARTICLES AND IMPURITY MOLECULE TRAPPING
Valeri Levdansky (Belarus), J. Smolik and P. Moravec (Czech Republic)

- P23 THE SMALL-ANGLE X-RAY SCATTERING STUDIES ON THE SYNTHESIS OF SILVER NANOPARTICLES
Tsang-Lang Lin, Yuan Hu, Te-Hsien Hsieh (Taiwan)
- P24 X-RAY INVESTIGATIONS OF NANOSTRUCTURED CP TI PROCESSED BY SEVERE PLASTIC DEFORMATION
Ascar Kilmametov, I.V. Alexandrov(Russia), L. Qian and K. Lu (China)
- P25 PLASMACHEMICAL FLUORINATION OF SINGLE WALLED CARBON NANOTUBES
 Reinhard Mach et al (Bundesanstalt fur Materialforschung und –prufung, Berlin, Germany)
- P26 EFFECTS OF HEAT TREATMENT ON THE STRUCTURE OF THERMAL PLASMA SYNTHESIZED SICN COMPOSITE NANOPOWDERS
 Reinhard Mach et al (Bundesanstalt fur Materialforschung und –prufung, Berlin, Germany)
- P27 MOLECULAR MOBILITY AND GAS TRANSPORT PROPERTIES OF POLYCARBONATE-BASED NANOCOMPOSITES
 Reinhard Mach et al (Bundesanstalt fur Materialforschung und –prufung, Berlin, Germany)
- P28 MECHANICAL PROPERTIES OF ZRO₂-AL₂O₃ NANOSTRUCTURED PVD COATINGS EVALUATED BY NANOINDENTATION
 A. Portinha et al (University of Minho, Portugal)
- P29 HYBRID MATERIALS BASED ON SINGLE-WALLED CARBON NANOTUBES AND TETRAAZAMACROCYCLIC COMPOUNDS
 Elena Basiuk et al (CCADET UNAM, Mexico)
- P30 AMIDATION AND ESTERIFICATION OF TERMINAL CARBOXYLIC GROUPS OF SINGLE-WALLED CARBON NANOTUBES: THEORETICAL STUDIES
 Vladimir Basiuk (Instituto de Ciencias Nucleares UNAM, Mexico)
- P31 CRYSTALLIZATION AND FAILURE BEHAVIORS OF Ta-Co NANOSTRUCTURED/AMORPHOUS DIFFUSION BARRIERS FOR COPPER METALLIZATION
Jau-Shiung Fang, H.L. Chang, G..S. Chen, and P. Y. Lee (Taiwan)
- P32 USE SERICIN AS AN ANTIOXIDANT AND ANTIMICROBIAL FOR POLLUTED AIR TREATMENT
Sara Sarovart, Rathawan Magaraphan, Boonya Sudatis, Prateep Meesilpa, Thananchai Leepakpreeda and Brian P. Grady (Thailand)
- P33 NONLINEAR OPTICAL PROPERTIES OF CU NANOPARTICLES SYNTHESIZED IN SILICA BY ION IMPLANTATION
 Andrei Stepanov (Germany)
- P34 STRUCTURAL AND OPTICAL PROPERTIES OF EU³⁺:HFO₂ NANOTHICK SOL-GEL WAVEGUIDING FILMS
Maricela Villanueva-Ibañez, C. Le Luyer, S. Parola, O. Marty, J. Mugnier (France)
- P35 PREPARATION AND CHARACTERIZATION OF MAGNETIC FE, FE/C AND FE/N NANOPARTICLES SYNTHESIZED BY CHEMICAL VAPOR CONDENSATION PROCESS
 Chul-Jin Choi, Byoung-Kee Kim (Korea), Oleg Tolochko (Russia)
- P36 THE RELATION OF THE MAGNETORESISTANCE AND MAGNETIC FRUSTRATION AMONG FERROMAGNETIC CLUSTERS IN LA(MN_{1-X}NI_X)O₃
 Akio Yamamoto (University of Tokyo, Japan)

- P37 STRUCTURES AND PROPERTIES OF THE CRYSTALLINE SI-C-N FILMS USING ADDITIONAL SI-SOURCE AND CO-CATALYST
Hui-Lin Chang (Taiwan)
- P38 GROWTH MODELS OF CARBON NANOTUBES ASSISTED WITH CO-BASED CATALYSTS
Hui Lin Chang , Cheng Tzu Kuo and Jau Shiung Fang (Taiwan)
- P39 ADSORPTION PROPERTIES OF OXYGEN, NITROGEN, AND ARGON ON SINGLE-WALLED CARBON NANOTUBE BUNDLES
Bee-Yu Wei et al (Taiwan)
- P40 IMPROVEMENT OF DIFFUSION BARRIER BEHAVIOR OF TI-RELATED NITRIDE THIN FILMS USING MULTILAYERED DESIGN
Giin-Shan Chen, C.C. Fu and P. Y. Lee (Taiwan)
- P41 SYNTHESIS AND MORPHOLOGY OF CARBON AND BORON NANOSTRUCTURES VIA MICROWAVE HEATING
Ubaldo Ortiz Munde, Oxana V. Kharissova, Manuel Rodriguez (MEXICO)
- P42 EXAMINATION OF CARBON NANOTUBE REINFORCED SILICON NITRIDE NANOCOMPOSITES
Cs. Balazsi et al (Hungary)
- P43 KINETICS OF AMORPHIZATION IN IRRADIATED NANOSCALE FILMS
A.B. Reizis (Russia)
- P44 VANADIUM OXIDE NANOFIBERS BY ELECTROSPINNING
H.Y. Kim, N. Bhattarai, D.R. Lee (South Korea), P. Viswanathamurthi (India)
- P45 PREPARATION AND MORPHOLOGY OF NIOBIUM OXIDE FIBER
H.Y. Kim, N. Bhattarai, D.R. Lee (South Korea), P. Viswanathamurthi (India)
- P46 PREPARATION AND PHOTOLUMINESCENCE PROPERTY OF GERMANIUM DIOXIDE NANO FIBER
H.Y. Kim, N. Bhattarai, D.R. Lee (South Korea), P. Viswanathamurthi (India)
- P47 SYNTHESIS AND CHARACTERIZATION OF PHOSPHORS NANOSIZED Y2O3 DOPED EU3+
Marco Antonio Flores-Gonzalez et al(Universite Claude Bernard Lyon, FRANCE)
- P48 STUDY ON MAGNETIC NANOPARTICLES-BIODEGRADABLE POLYMER COMPOSITE
Gan Moog Chow and H. Yin (Singapore)
- P49 POLYMER NANOCOMPOSITES AS FLAME RETARDANT: EFFECT OF FILLER TYPES
Jirawadee Pipattantornkul, Sujitra Wongkasemjit, Manit Nithitanakul, Hatsuo Ishida, Rathanawan Magaraphan (Thailand)
- P50 CLASSIFICATION OF THREE_TERMINAL JUNCTION CARBON NANOTUBES
Sergey Lisenkov, L. Chernozatonskii (Russia)
- P51 INFLUENCE OF SURLYN® IONOMER COMPATIBILIZER ON PHASE MORPHOLOGY, CRYSTALLIZATION BEHAVIOR AND THERMAL STABILITY OF PA6/SURLYN®/LDPE BLENDS
Janta Trimongkol, Manit Nithitanakul (Thailand), John W. Ellis, Brian P. Grady (USA)

- P52 MAGNETORESISTANCE STUDY IN PATTERNED $\text{Ni}_{80}\text{Fe}_{20}$ U-SHAPE NANO-WIRES
Y. D. Yao, J.L. Tsai, and S.F. Lee (Taiwan)
- P53 MISCIBLE BLEND OF ETHYLENE-METHYL-ACRYLATE-ACRYLIC ACID
TERPOLYMER(ESCOR) AND ETHYLENE ACRYLIC ACID COPOLYMERS (EAA)
Manit Nithitanakul, Nathaporn Somrang (Thailand), Brian Grady (USA)
- P54 CHITINEOUS GEL VIA EPOXY GROUP INCORPORATION AND ITS HYDROXYAPATITE
FORMATION
Fungangwanwong, J., Tokura, S., and Chirachanchai, S. (Thailand)
- P55 WITHDRAWN
- P56 A NEW MEMS-BASED RESONANT PROBE FOR SCANNING PROBE MICROSCOPY FOR
STUDIES OF CONDUCTIVE AND NON-CONDUCTIVE MATERIALS
A. Pavlov and R. Laiho (Finland)
- P57 SURFACE SPIN DISORDER AND EXCHANGE BIAS IN $\text{La}_{0.7}\text{Ca}_{0.3}\text{MnO}_3$
NANOPARTICLES SYNTHESISED BY MECHANOCHEMICAL PROCESSING
M. Muroi, P. G. McCormick, R. Street (Australia)
- P58 COERCIVITY AND MICROSTRUCTURE OF NANO-COMPOSITE FEPTCR-SIN THIN FILMS
P. C. Kuo, A. C. Sun, Y. D. Yao, S. C. Chen, C. C. Chiang (Taiwan)
- P59 STUDIES OF SORPTION PROPERTIES, TOTAL HETEROGENEITY AND FRACTAL
DIMENSIONS OF CARBON NANOTUBES
Piotr STASZCZUK, Magdalena MATYJEWICZ, Ewa KOWALSKA, Joanna RADOMSKA, Przemyslaw
BYSZEWSKI (Poland)
- P60 PREPARATION AND CHARACTERIZATION OF CARBON NANOTUBE-EPOXY
COMPOSITES
Krisztian Niesz, Zoltan Konya, Imre Kiricsi (Hungary)
- P61 CRYSTALLIZATION PROCESSES OF AMORPHOUS TI-BASED ALLOYS
A. Jianu, D-V Cojocaru (Bucharest)
- P62 OPTICAL FILMS BASED ON POLY(P-PHENYLENE VINYLENE) (PPV) AND ITS
NANOCOMPOSITES
Duangporn Saramas, Rathanawan Magaraphan, David C. Martin (Thailand)
- P63 POLYMER-LAYER SILICATE NANOCOMPOSITES IN SOLUTION: LINEAR PEO AND
HIGHLY BRANCHED DENDRIMER FOR ORGANIC WASTEWATER TREATMENT
Korawan Ratanarat, Rathanawan Magaraphan, Manit Nithitanakul and David C. Martin (Thailand)
- P64 GIANT MAGNETO-RESISTANCE OF THE NEW MAGNETIC SEMICONDUCTORS
CONTAINING $\text{CuCr}_{1.5}\text{Sb}_{0.5}\text{S}_4$ WITH Co.
D. Saifullaeva, Sh. Solieva (Uzbekistan)
- P65 SINTERING BEHAVIOR OF TITANIUM-TITANIUM NITRIDE NANO-NANOCOMPOSITE
POWDERS
Vikram Dabhade et al (India)
- P66 CRYSTALLIZATION PROCESSES OF AMORPHOUS MELT SPUN $\text{Fe}(\text{Ti,Zr})\text{NDB}$ ALLOYS
D-V Cojocaru, et al (Romania)

P67 NB-BASED SUPERCONDUCTING SINGLE ELECTRON TRANSISTORS
Sorin Paraoanu, G.-S. Paraoanu, J. Toppari, A. Halvari, K. Hansen, and J. Pekola (Finland)

P68 FORMATION AND FIELD-EMISSION PROPERTIES OF CARBON NANOFIBERS BY A SIMPLIFIED THERMAL GROWTH
Chien-Te Hsieh, Jin-Ming Chen, and Yue-Hao Huang (Taiwan)

P69 SYNTHESIS AND CHARACTERISTIC AS FILLER OF ALUMINUM HYDROXIDE NANO PARTICLES
Kazuki Takemura, Satoru Nippa, H. Nakajima (Japan)

P70 METAL-CONTAINING NANOPARTICLES ON THE SURFACE OF NANOGRANULES OF ULTRADISPERSED POLYTETRAFLUOROETHYLENE
Gubin S.P., Korobov M.S., Yurkov G. Yu., N.S. Kurnakov (Russia)

P71 MOLECULAR DYNAMICS STUDY OF THE TEMPERATURE DEPENDENCE OF THE CRITICAL SIZE OF SILICON NUCLEATION
Yu-Tsung Chiu, Chung Hsing, J. -T. Yeh (Industrial Technology Research Institute, Taiwan)

P72 CRYSTALLINE FULLERENE THIN FILMS PREPARED AT ROOM TEMPERATURE BY SYNCHROTRON RADIATION ABLATION
Hidejiro Miki, H. Nakanishi and S. Imai (Japan)

P73 NANOSCALE COPPER AND SILVER CONDUCTORS UNDER THE EFFECT OF ELECTROMIGRATION
A. Ramirez and A. Zehe (Mexico)

P74 A LUMINESCENCE RADIATION TECHNIQUE FOR MEASURING STRUCTURE STABILITY IN SUPERLATTICES
A. Ramirez and A. Zehe (Mexico)

WEDNESDAY, September 3, 2003

Morning Session A4: STRUCTURE AND PROPERTIES

OF NANOMATERIALS III (Sept. 3 9:00 – 11:00) Session Chair: C.C. Koch

- 9:00 – 9:40 4A O1 INTERFACES IN NANOSTRUCTURED SOLIDS
I.A. Ovid'ko (Russian Academy of Sciences, Russia)
- 9:40 – 10:20 4A I1 CHALCOGENIDE NANO/MICRO-SCALE STRUCTURES
S. K. Sundaram, B. R. Johnson, M. J. Schweiger, J. E. Martinez,
and Brian J. Riley (USA)
- 10:20 – 11:00 4A I2 GRAIN BOUNDARY DIFFUSION IN METALS
Y. Mishin (USA)
- 11:00 – 11:30 COFFEE-BREAK

Noonday Session A4: STRUCTURE AND PROPERTIES OF NANOMATERIALS IV

(Sept. 3 11:30 – 13:40) Session Chair: J.Th.M. De Hosson

- 11:30 – 12:00 4A I3 DEFORMATION MECHANISMS IN
NANOCRYSTALLINE MATERIALS
M.Yu. Gutkin et al (Institute of Problems of Mechanical
Engineering, Russia)
- 12:00 – 12:40 4A I4 DIFFUSION IN NANOCRYSTALLINE MATERIALS
Ulrich Brossmann, R. Wuerschum (Austria),
S. Herth, H.-E. Schaefer (Germany)
- 12:40 – 13:00 4A O2 ELECTRICAL PROPERTIES AND DEVICE
APPLICATIONS OF AG(TCNQ) NANOWIRES
Zhiyong Fan and J.G. Lu (USA)
- 13:00 – 13:20 4A O3 NONLINEAR OPTICAL PROPERTIES OF
Cu NANOPARTICLES SYNTHESIZED IN SILICA
BY ION IMPLANTATION
Andrei Stepanov (Germany)
- 13:20 – 13:40 4A O4 ELECTROCHEMICAL PROPERTIES OF THE MULTI WALL
CARBON NANOTUBE ELECTRODE FOR SECONDARY
LITHIUM-ION BATTERY
Hsiang-Ming Hsoeh, Nyan-Hwa Tai, Chi-Yuan Lee (Taiwan)

Evening Session A4: STRUCTURE AND PROPERTIES OF NANOMATERIALS V

(Sept. 3 17:00 – 19:00) Session Chair: V. Teixeira

- 17:00 – 17:40 4A I4 PHASE CONTRAST MICRORADIOGRAPHY
EXAMINING MATTERS DEEPER WITH HIGHER
PRECISION
Y. Hwu et al (Taiwan)

- 17:40 – 18:20 4A I5 INTERFACIAL STRUCTURES OF GAN/SAPPHIRE AND CO/SI USING SYNCHROTRON X-RAYS
Jung Ho Je et al (Korea)
- 18:20 – 19:00 4A I6 APPLICATION OF IMAGE PROCESSING TO THE CHARACTERIZATION OF NANOSTRUCTURES
Manuel Costa (Portual)

Noonday Session B4: THEORY AND MODELING OF NANOSTRUCTURES I
(Sept. 3 11:30 – 13:30) Session Chair: E. Aifantis

- 11:30 – 12:10 4A I3 THE STORY OF MANGANESE: FROM CLUSTERS TO CRYSTALS
Bijan Rao, P. Jena (USA)
- 12:10 – 12:50 4A I4 TIGHT-BINDING SIMULATIONS OF THE VARIOUS POLYTYPES OF SILICON CARBIDE
Dimitrios Papaconstantopoulos, H. Gotsis, M.J. Mehl (USA)
- 12:50 – 13:10 4A O1 LATTICE DYNAMICS OF SILICON BULK AND NANOWIRE
Liu Yang (USA)
- 13:10 – 13:30 4A O2 PSEUDOPOTENTIAL THEORY OF SEMICONDUCTOR QUANTUM DOTS, WIRES, AND FILMS
Alex Zunger (USA)

Evening Session A4: THEORY AND MODELING OF NANOSTRUCTURES II
(Sept. 3 17:00 – 19:00) Session Chair: D. Papaconstantopoulos

- 17:00 – 17:30 4A O3 HYDROGEN STORAGE IN SWNTS. A MIXED QM/MM STUDY
G. Froudakis (Greece)
- 17:30 – 17:50 4A O4 COMPUTATIONAL STUDIES OF SWCNTS CAPPED BY HEMISPHERES OF C60 FULLERENE, BASED ON SEMI-EMPIRICAL METHODS
Leszek Stobinski, J. Peszke, Hong-Ming Lin (Taiwan)
- 17:50 – 18:10 4A O5 THEORY OF NONLINEAR WAVEGUIDING DUE TO EXCITON-BIEXCITON CONVERSION IN THE NANOSEMICONDUCTORS
Peter I. Khadzhi (Moldova)
- 18:10 – 18:30 4A O6 BAND-GAP WIDENING OF 1-10NM Q-CDS IN VARIOUS SURFACTANT SELF-ASSEMBLIES: TIGHT BINDING AND EFFECTIVE MASS MODELS
Prashant Sawant (Singapore)

THURSDAY, September 4, 2003

Morning Session A5: NANOCOMPOSITES (Sept. 4 9:00 – 11:00)

Session Chair: M. Solieau

9:00 – 9:40	5A I1	ASSEMBLY & ENGINEERING OF NANO-PARTICLES FOR FUNCTIONAL NANOCOMPOSITES Thomas Tsakalakos (Rutgers University, USA)
9:40 – 10:00	A5 O1	HYBRID ORGANIC-INORGANIC POLYMERS WITH NANOSCALE BUILDING BLOCKS: PRECURSORS, PROCESSING, PROPERTIES AND APPLICATIONS <u>Karl-Heinz Haas</u> and Klaus Rose (Germany)
10:00 – 10:20	A5 O2	THERMOSET AND THERMOPLASTIC COMPOSITES USING POLYMER WRAPPED SWNTs AS REINFORCEMENT Richard Bley (USA)
10:20 – 10:40	A5 O3	LASER CONTROLLED MECHANICAL ACTUATION OF PHOTOCHROMIC-POLYMER MICROSYSTEMS A. Athanassiou et al (Greece)
10:40 – 11:00	A5 O4	THE VERWEY TRANSITION IN MAGNETITE NANOPARTICLES STABILIZED IN POLYMER THIN FILMS Yu.A.Koksharov, G.B. Khomutov, A.V. Volkov (Russia)
11:00 – 11:30		COFFEE-BREAK

Noonday Session A5: STRUCTURE AND PROPERTIES OF NANOMATERIALS VI (Sept. 4 11:30 – 13:00) Session Chair: T. Tsakalakos

11:30 – 12:10	A5 I2	MECHANICAL BEHAVIOR OF MULTI-SCALE CRYOMILLED AL-MG ALLOYS D. Witkin, S. Nutt, J. Schoenung, E.J. Lavernia (USA)
12:10 – 12:40	A5 O5	FABRICATION OF FIBROUS MONOLITHIC AL_2O_3/ZRO_2 NANO-COMPOSITES Byong-Taek Lee (Korea), Taek-Soo Kim (Korea) and Takashi Goto (Japan)
12:40 – 13:00	A5 O6	SINTERING OF NANOCRYSTALLINE WC-CO COMPOSITE POWDERS Gang-qin Shao et al (China)

Monday Session B5: NANOSTRUCTURED FILMS (Sept. 4 9:00-11:00)

Session Chair: Y. Hwu

9:00 – 9:40	B5 I1	INO _x NANOSTRUCTURED THIN FILMS G. Kiriakidis (Greece)
9:40 – 10:00	B5 O1	LOW-ENERGY ELECTRON BEAM ASSISTED GROWTH AND NANOPATTERNING: SPATIAL CONTROL VIA INTERFERENCE EFFECTS Thomas Orlando (USA)
10:00 – 10:20	B5 O2	STRUCTURAL ORDERING OF METAL-CONTAINING AMORPHOUS CARBON THIN FILMS INDUCED BY LOW-ENERGY ELECTRON BEAM PROJECTION Eiji Iwamura (Japan)
10:20 – 10:40	B5 O3	SYNTHESIS OF HIGH PERFORMANCE ELECTROLYTE CELL WITH NANO ORDERED CeO ₂ THIN ELECTROLYTE FILM Shintaro Ishiyama (Japan)
10:40 – 11:00	B5 O4	GROWTH FRONT ROUGHENING AND STRUCTURE OF DEPOSITED NANOCLUSTER FILMS Siete Koch, George Palasantzas, Thomas Vystavel, Jeff Th.M. De Hosson (The Netherlands)

Noonday Session B5: SYNTHESIS AND PROCESSING V (Sept. 4 11:30 – 13:30)

Session Chair: M. Trudeau

11:30 – 11:50	B5 O5	ENHANCED APPROACH TO SYNTHESIZE CARBON ALLOTROPES BY ARC PLASMA R.Dubrovsky and V. Bezmelnitsyn (USA)
11:50 – 12:10	B5 O6	MODIFICATION OF METAL NANOPARTICLES IN SiO ₂ BY THERMAL OXIDATION <u>Hiroshi Amekura</u> , Y. Takeda, K. Kono, N. Kishimoto (Japan)
12:10 – 12:30	B5 O7	CATALYTIC OXIDATION OF CARBON MONOXIDE OVER COBALT OXIDES Yeong-Jey Chen, Dai-en Wu and Chuin-tih Yeh (Taiwan)
12:30 – 12:50	B5 O8	AN INDUSTRIAL METHOD FOR NANOPARTICLE SYNTHESIS WITH WIDE RANGE OF COMPOSITIONS Markku Rajala, Pekka Kykkanen, Kauko Janka (Finland)
12:50 – 13:10	B5 O9	PREPARATION AND CHARACTERIZATION OF VARIOUS NANO-METAL OXIDES USING HYDRAZINE HYDRATE IN SOLUTION COMBUSTION METHOD Prashant Sawant (Singapore)

FRIDAY, September 5, 2003

Morning Session A6: APPLICATIONS OF NANOSTRUCTURES I **(Sept. 5 9:00 - 10: 50) Session Chair: S.K. Sundaram**

9:00 – 9:40	6A I21	OUTDOOR AIR QUALITY MONITORING MICRO-STATIONS MADE POSSIBLE BY NANOTECHNOLOGY <u>Marie-Isabelle Baraton</u> , Lhadi Merhari (France)
9:40 – 10:10	6A O1	NANOSCALE ELECTRONICS FOR CHEMICAL SENSING Philip Collins (USA)
10:10 – 10:50	6A I2	STRUCTURAL APPLICATIONS FOR ELECTROFORMED NANOCRYSTALLINE METALS, ALLOYS AND METAL-MATRIX COMPOSITES <u>Gino Palumbo</u> and Uwe Erb (Canada)

Noonday Session A6: APPLICATIONS OF NANOSTRUCTURES II **(Sept. 5 11:30 – 13:50) Session Chair: P. Collins**

11:30 – 11:50	6A O2	PROPERTIES AND APPLICATIONS FOR ELECTRODEPOSITED NANOCRYSTALLINE FE-NI ALLOYS <u>Jonathan L. McCrea</u> , Gino Palumbo and Uwe Erb (Canada)
11:50 – 12:10	6A O3	NANOSTRUCTURED CONJUGATED POLYMERIC SYSTEMS FOR PHOTOVOLTAIC APPLICATIONS Vladimir Soloviev (Germany)
12:10 – 12:30	6A O4	PROTONIC NANODEVICES. Jerzy J. Langer (Poland)
12:50 – 13:10	6A O5	TRANSPARENT FILMS FOR ELECTROMAGNETIC SHIELDING OF PLASTICS Francesca Sarto et al (Italy)
13:10 – 13:30	6A O6	SINGLE-WALL CARBON NANOHORN ASSEMBLY AS A POTENTIAL APPLICANT FOR HYDROGEN AND METHANE STORAGE Katsuyuki Murata et al (Japan)
13:30 – 13:50	6A O7	AEROSOLS -AN OPPORTUNITY FOR NANOTECHNOLOGY- SURFACE TREATMENT, ALSO ON LARGE SCALE Georg Bolte (GERMANY)

Noonday Session B6: SYNTHESIS AND PROCESSING VI **(Sept. 5 11:30 - 14:00) Session Chair: L. Ajdelsztajn**

11:30 – 11:50	6B O1	HYDROTHERMAL SYNTHESIS OF CERAMIC NANOPOWDERS. MODELLING AND EXPERIMENTAL VERIFICATION. R.R. Piticescu et al (Romania)
---------------	-------	--

11:50 – 12:10	B6 O2	SINTERING OF BULK OXIDIC CERAMICS Karel Maca et al (Czech Republic)
12:10 – 12:30	6B O3	STUDIES ON REACTIVE SINTERING BEHAVIOR OF MILLED NANO MO/SI ₃ N ₄ POWDER MIXTURE Sheela Singh et al (INDIA)
12:30 – 12:50	6B O4	GROWTH CONTROL OF GA AND IN NANODOTS VIA PHOTOCHEMICAL REACTIONS FOR APPLICATIONS TO GROUP III NITRIDES-BASED NANOPHOTONIC DEVICES Tae-Won Kim et al (Japan Science and Technology Corporation, Japan)
12:50 – 13:10	6B O5	CALCIUM PHOSPHATES AND HYDROXYLAPATITE THIN FILMS PROCESSING BY ASSISTED ULTRAVIOLET PULSED LASER DEPOSITION <u>Valentin Nelea</u> , Valentin Craciun, Ion N. Mihailescu (France)
13:10 – 13:30	6B O6	COMPARISON OF DIFFERENT SUPPORT TYPES FOR THE PREPARATION OF NANOSTRUCTURED CATALYTIC MEMBRANES Eduard Emil IOJOIU et al (France)

Panel Discussion (14:00-15:00):

**NANOMATERIALS AND NANOTECHNOLOGIES:
CHALLENGES, OPPORTUNITIES AND NEW TRENDS**

SATURDAY, September 6, 2003

10:00 – 11:00

Organizing committee meeting

ACKNOWLEDGEMENTS:

We wish to thank the following for their contribution to the success of this conference:

Advanced Study Center (Russia)

**European Office of Aerospace Research and Development, Air Force
Office of Scientific Research (USA), Air Force Research Laboratory (USA)**

National Science Foundation (USA)

University of Central Florida (USA)