

Programme

Frontiers of NanoEngineering

2003



Universidade Estadual de Campinas, Campinas, SP - Brasil

Final PROGRAMME**FRONTIERS OF NANOENGINEERING 2003**Wednesday 1st October 2003

14h00-15h30	Short Course A "Whole cell biosensors"	Shimshon Belkin
15h30-17h30	Short Course B "Nanoscale measurements: real image or artifacts?"	Stephen Hsu
18h30	Welcome Cocktail	

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Opening session		
08h00-08h45	Registration	
08h45-09h00	Opening remarks	
09h00-09h30	Opening Ceremony	
09h30-09h35	Honours to Professor Lattes	
NanoElectronics Chair: Stephen M. Hsu, National Institute of Standards and Technology, USA		
09h35-10h00	Philip J. Kuekes, Gadiel Seroussi and R. Stanley Williams Information Theory Research Hewlett-Packard Laboratories, USA	Defect-tolerant interconnect to nano-electronic circuits
10h00-10h30	Coffee	

NanoSensors Chair: Gadiel Seroussi, Hewlett-Packard Laboratories, USA		
10h30-10h45	<u>Shimshon Belkin</u> The Hebrew University of Jerusalem, Israel	Genetically engineered microorganisms as whole-cell biosensors
10h45-11h00	<u>C. Bittencourt</u> ¹ , <u>L. Houssiau</u> ¹ , <u>J.J. Pireaux</u> ¹ , <u>E. Llobet</u> ² , <u>P. Ivanov</u> ² , <u>X. Vilanova</u> ² , <u>X. Correig</u> ² , <u>M.A.P Silva</u> ³ and <u>L.A.O Nunes</u> ³ ¹ Facultés Universitaires Notre Dame de la Paix, Belgium ² Universitat Rovira i Virgili, Spain ³ Instituto de Física de São Carlos, Brazil	Ag modified nano-WO ₃ powders for gas sensing applications: NH ₃ and NO ₂
11h00-11h15	<u>Suranjan Panigrahi</u> North Dakota State University, USA	Nanomaterials and nanosystems for agricultural applications
11h15-11h30	<u>Fábio de Lima Leite</u> ^{1, 3} ; <u>Carlos Eduardo Borato</u> ^{1,3} ; <u>Antônio Riul Júnior</u> ² ; <u>Oswaldo N. Oliveira Jr</u> ¹ ; <u>Rubens Bernardes Filho</u> ³ , and <u>Luiz Henrique Capparelli Mattoso</u> ^{1,3} ¹ Universidade de São Paulo, Brazil ² Universidade Estadual Paulista, Brazil ³ Embrapa Instrumentação Agropecuária, Brasil.	Taste sensors from nanostructured films
Magnetic Nanoparticles and Fluids Chair: James L. Merz, University of Notre Dame, USA		
11h30-11h45	<u>Carlos Rinaldi</u> ¹ , <u>Adam D. Rosenthal</u> ² , <u>Xiaowei He</u> ² , <u>Cory Lorenz</u> ² , and <u>Markus Zahn</u> ² ¹ University of Puerto Rico, Mayagüez, Puerto Rico ² Electrical Engineering and Computer Science, MIT, USA	Rotating magnetic field effects in suspensions of magnetic nanoparticles
11h45-12h00	<u>Oscar Perales-Perez</u> ¹ , <u>Balachandran Jeyadevan</u> ² , <u>Kazuyuki Tohji</u> ² , and <u>Atsuo Kasuya</u> ³ ¹ University of Puerto Rico, Mayagüez, Puerto Rico ² Department of Geosciences and Technology Tohoku University, Japan. ³ Center for Interdisciplinary Research Tohoku University, Japan.	Size and structure-controlled synthesis of Co nanoparticles and their magnetic properties

12h00-12h15	<u>Qu Fanyao</u> , D. R. Santos Jr., R. H. Oliveria, and N. O. Dantas Universidade Federal de Uberlândia, Brasil.	Effects of permanent magnetization of nanoparticles on the fluid stability
Nanorobotics: Chair: Ramiro Jordan, University of New Mexico, US		
12h15-12h30	<u>Adriano Cavalcanti</u> Darmstadt University of Technology, Germany	Nanorobotics control techniques with nano computer aided design (CAD) for biomedical applications
12h30-14h00	Lunch	
Scanning Probe Nanoscopy Chair: Ravi Kumar, Nuclear Science Centre, India		
14h00-14h15	<u>Valentinas Snitka</u> ¹ , Raminta Rodaite ¹ , and Mindaugas Rackaitis ² ¹ Kaunas University of Technology, Lithuania ² The Pennsylvania State University, USA	Investigation of aggregated porphyrin (TTPS ₄) nanotubules by atomic force microscopy
14h15-14h30	Bertina Posada ³ , S. P. Hernandez ³ , Julio Briazo ¹ , Roberto Irizarry ² , L. Sola ² , and <u>Miguel E. Castro</u> ³ ¹ The University of Puerto Rico at Mayagüez, Puerto Rico ² Dupont Microelectronics, Puerto Rico ³ The University of Puerto Rico at Mayaguez, Puerto Rico	Surface chemistry of gold nanoparticles: A near field optical microscopy study
14h30-14h45	<u>M. I. N. da Silva</u> ¹ , S. N. Dezidério ² , J. C. Gonzalez ³ , C. F. O. Graeff ² , and M. A. Cotta ¹ . ¹ Universidade Estadual de Campinas, Brazil. ² Universidade de São Paulo, Brazil. ³ Laboratório Nacional de Luz Síncrotron, Brazil.	Characterization by scanning probe microscopy of synthetic melanin thin films.

High Energy Atomic Beams for Materials NanoStructuring Chair: Sergej Fatikow, University of Oldenburg, Germany		
14h45-15h00	<u>Ravi Kumar</u> ¹ , S.K. Sharma ² , Anjana Dogra ² , A. Gupta ³ , A. Saraiya ³ , V.V. Siva Kumar ¹ and M. Singh ² ¹ Nuclear Science Centre, India ² Himachal Pradesh University, India ³ IUC-DAEF, India	Swift heavy ion induced modifications in structural and magnetic properties of nano particles and thin films of Mg-ferrite
15h00-15h15	L. M. Gomez ^{1,2} , S. Hernandez ^{1,2} , R. T. Chamberlain ^{1,2} , R. Lareau ^{1,2} and <u>Miguel E. Castro Rosario</u> ^{1,2} ¹ The University of PuertoRico at Mayagüez, Puerto Rico; ² Federal Aviation Administration Technical Center, USA	Nanoengineered high energy materials: A near field optical microscopy study
15h15-15h30	<u>L. C. Kretly</u> ¹ and M.A.S.Fregonezi ² ¹ Department of Microwave and Optics, DMO, State University of Campinas, Electrical and Computer Engineering Faculty, Brazil ² Department of Microelectronics, DEMIC, State University of Campinas, Electrical and Computer Engineering Faculty, Brasil	Energy balance analysis of proton and He implantation into self assembled monolayers for nanometric lithography.
15h30-16h30 Coffee + POSTER Session		
NanoStructured Carbon, Nanotubes and Fullerenes Chair: Carlos Rinaldi, University of Porto Rico at Mayagüez, Porto Rico		
16h30-16h45	A. Felten, <u>C. Bittencourt</u> and J.J. Pireaux Falcultés Universitaires Notre Dame de la Paix, Belgium	Carbon nanotubes surface functionalization by RF-plasma
16h45-17h00	D. Schultz, R. Droppa Jr., F. Alvarez and <u>M. C. dos Santos</u> Universidade Estadual de Campinas, Brazil	Stability of small carbon-nitride heterofullerenes
17h00-17h15	<u>Helder José Ceragioli</u> ¹ , Márcio Fontana ¹ , Alfredo Carlos Peterlevitz, and Vitor Baranauskas ¹ ¹ Faculdade de Engenharia Elétrica e Computação, Departamento de Semicondutores, Instrumentos e Fotônica, Universidade Estadual de Campinas, Brasil.	Self-ordered carbon structures deposited by chemical vapor deposition using noble gases at high concentrations

17h15-17h30	<u>Ana Claudia M. Carvalho</u> and Maria Cristina dos Santos Universidade Estadual de Campinas, Brazil	Nanodevice structures based on carbon nitride nanotubes
17h30-17h45	L. P. Neves ¹ , A. B. Peres ¹ and <u>R.J. Baierle</u> ¹ ¹ Centro Universitário Francisca, Brasil	Theoretical study of natives defects in SiC-nanotubes
19h00	Conference Banquet	

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Friday 3rd October 2003

Quantum Physics and Quantum Dots Chair: Carla Bittencourt, Facultés Notre Dame de la Paix, Belgium		
09h00-09h15	<u>Boris Zakhariiev</u> , Vladimir Chabanov Russia Laboratory of Theoretical Physics, Russia	Submissive quantum mechanics: new Status of theory in inverse problem approach (in pictures). Necessary notions for nano-experts
09h15-9h30	A.M. Mintairov ^{1,2} , P.A. Blagnov ² , A.S. Vlasov ² , C. Li ³ , K.Sun ¹ , and <u>J.L. Merz</u> ¹ ¹ University of Notre Dame, USA ² Ioffe Physico-Technical Institute, Russia ³ Dept. of Aerospace and Mechanical Engineering, University of Notre Dame, USA	Near-field magneto-photoluminescence and optical-fiber-induced stress experiments on quantum dots in III-V semiconductor compounds
9h45-10h00	<u>Gilberto Medeiros-Ribeiro</u> Laboratório Nacional de Luz Síncrotron, Brasil.	Quantum dot quantum computing

Adhesion and Friction at NanoScale Chair: Valentinas Snitka, Kaunas University of Technology, Lithuania		
10h00-10h15	<u>Stephen M. Hsu</u> and Charles Ying National Institute of Standards and Technology, USA	Measurement issues at the nanoscale: adhesion and friction
10h15-10h45	Coffee	
Nanometric Instruments and MEMS Chair: Miguel E. Castro, University of Porto Rico at Mayagüez, Porto Rico		
10h45-11h00	<u>Sergej Fatikow</u> , Olaf Hänßler, Helge Hülsen, Jens Kamenik, Axel Kortschack, and Torsten Sievers University of Oldenburg, Germany	Development of a versatile robot for nanohandling inside a scanning electron microscope
11h00-11h15	Dimitrios Anagnostou, Christos Christodoulou, and <u>Ramiro Jordan</u> University of New Mexico	Micro electrical mechanical systems (MEMS) and reconfigurable antennas
Optical and Electronic Properties of Nanoparticles and Surfaces Chair: Gilberto Medeiros-Ribeiro, Laboratório Nacional de Luz Síncrotron, Brasil.		
11h15-11h30	<u>C. E. M. de Oliveira</u> ¹ , A. J. Agranat ¹ , N. Axelrod ¹ and I. Shalish ² ¹ Hebrew University of Jerusalem, Israel. ² Harvard University, USA	Controlled growth of striations in potassium lithium tantalate niobate crystals: Paving the way to all-optical switching
11h30-11h45	<u>Julio G. Briano</u> ¹ , Eder Vicuña ¹ , Miguel Castro ² , Roberto Irizarry ³ , and Luis Solá ³ ¹ Chemical Engineering, University of Puerto Rico, Puerto Rico ² Chemistry Department, University of Puerto Rico, Puerto Rico ³ DuPont <i>i</i> Technologies, Puerto Rico	A perturbation approach to the modeling of the optical properties of polydisperse mixtures of metallic nanoparticles
11h45-12h00	L.F. dos Santos ⁽¹⁾ , Andrés Vercik ⁽¹⁾ , and <u>Yara Galvão Gobato</u> ⁽¹⁾ ¹ Departamento de Física, Universidade Federal de São Carlos, São Carlos, SP, Brasil.	Photoluminescence studies of GaAs/GaAlAs double barrier diodes

12h00-12h15	E. A. Vieira ¹ , J. C. Rossi ¹ , A. Vercik ¹ , Y. Galvão Gobato ¹ ¹ Universidade Federal de São Carlos, Brazil	Electro-optical study of the tristability of resonant tunneling diodes
12h15-14h00	Lunch	
NanoMedicine Chairs: Maria Alice Cruz-Höfling, Instituto de Biologia, UNICAMP, Brasil <i>and</i> William Dias Belangero, Faculdade de Ciências Médicas, UNICAMP, Brasil		
14h00-14h15	M. Ceolin ^(1,2,3) and R. Rivera Pomar ^(1,2) ¹ Max Planck Institute for Biophysical Chemistry, Germany. ² Centro Regional de Estudios Genómicos, Argentina. ³ Instituto de Física La Plata, Argentina.	Screening of macromolecular interactions using magnetizable nanoparticles
14h15-14h30	J. B. Destro-Filho ¹ , P. Bonifazi ² , J.S.M. Shinosaki ³ ; Q. Fanyao ⁴ , G. Lepski ⁵ , W. F. Pereira ³ , F. S. Spindola ³ and N.L. Peixoto ⁶ . ¹ Control Systems Lab., School of Electronic Engineering, University of Uberlândia (UFU), MG, Brazil. ² Biophysics Division, Center for Advanced Studies (SISSA), Trieste, Italy. ³ Clinical Medics Department, School of Medicine, UFU, MG, Brazil ⁴ LNMIIS, Faculty of Physics, UFU, MG, Brazil. ⁵ Department of Neurology, School of Medicine, University of São Paulo, Brazil. ⁶ Center for Integrated Systems, University of Stanford, USA.	Signal processing of action potentials for neuroimplants and nano-device application: Preliminary results and perspectives for neural engineering, biology and medicine
14h30-14h45	J. S. Rodrigues ¹ , N. S. Santos-Magalhães ¹ , L. C. B. B.Coelho ² , P. Couvreur ³ , G. Ponchel ³ , R. Gref ³ ¹ Laboratório de Imunopatologia Keizo-Asami, UFPE, Brazil; ² Laboratório de Glicoproteínas, UFPE, Brazil ³ Université Paris Sud, Faculté de Pharmacie, France	Novel core (polyester)-shell (polysaccharide) nanoparticles: Protein loading and surface modification with lectins

14h45- 15h00	Noemia Pereira dos Santos ¹ , Ana Oliva de Souza ² , Roseane Maria Ribeiro-Costa ¹ , Eugênia Cristina Pereira ¹ , Nicácio Henrique da Silva ¹ and <u>Nereide Stela Santos-Magalhães¹</u> ¹ Laboratório de Imunopatologia Keizo Asami , UFPE, Brasil. ² Departamento de Bioquímica e Imunologia, USP, Brasil.	Antimycobacterial activity of nanoparticulated systems containing usnic acid
15h00-15h15	<u>Nelson Durán^{1,2}</u> , Ana O. de Souza ⁵ , Celio L. Silva ⁵ Marcelo M.M. de Azevedo ¹ , Giselle Z. Justo ³ , Priscyla D. Marcato ¹ , Camila M.S. Buffo ² , Renata de Pádua ² , Patricia S. Melo ⁴ , Marcela Haun ⁴ ¹ Institute of Chemistry, UNICAMP, Brazil ² Center of Environmental Sciences – UMC, Mogi da Cruzes, Brazil ³ Department of Pharmacology, Medical School, UNICAMP, Brazil ⁴ Department of Biochemistry, Institute of Biology, UNICAMP, Brazil ⁵ Medical School, USP Ribeirão Preto – SP, Brazil	In vitro antitumoral and antibacterial activities of violacein, streptomycin and propolis encapsulated in Poly(ε-caprolactone) (PCL) / Poly(lactide-co-glycolide) (PLGA) micro and nanospheres
15h15-15h30	Cesar A. S. Andrade ¹ ; Maria T. S. Correia ² ; Luana C. B. B. Coelho ² ; Silene C. Nascimento ² ; <u>Nereide S. Santos-Magalhães^{1,2}</u> ¹ Laboratório de Imunopatologia Keizo-Asami, UFPE, Brazil ² Laboratório de Glicoproteínas, UFPE, Brazil	Antitumor activity of cratylia mollis lectin encapsulated into liposomes
15h30-16h00	Coffee	
NanoEngineering: World Trends & Investment Policy Chairs: Lueny Morell, HP University Relations and Marcio Fontana, Departamento de Semicondutores, Instrumentos e Fotônica, Unicamp, Brasil		
	A. L. Fletcher	Race to the bottom: United States national security and the nanotechnology research and development act of 2003
	W. Zhongxiang	Shared nanomeasurement & nanofabrication facilities in a testing center of nanometer material
	Kathleen Hickman	Nanomaterials: It's a Small, Small World
17h00-17h30	Close & Happy Times	

Advanced Topics: Chairs: Amy L. Fletcher, University of Canterbury, New Zealand
and Maria Cristina dos Santos, IFGW, Universidade Estadual de Campinas, Brazil

Poster mounting on Thursday, early morning	<u>J. R. R. Bortoleto</u> , H. R. Gutiérrez, M. A. Cotta, L. P. Cardoso, and M. M. G. de Carvalho DFA/LPD, UNICAMP, Campinas-SP, Brazil	The role of InGaP film properties in lateral ordering of InP/InGaP dots
Coffee-discussion hour: 15h30-16h30	<u>M. I. N. da Silva</u> ^{1,2} , J. C. González ^{1,3} , and P. E. Russell ¹ ¹ North Carolina State University, USA. ² Universidade Estadual de Campinas, Brazil. ³ Laboratório Nacional de Luz Síncrotron, Brazil	Characterization of GaN p-n heterostructures by scanning probe microscopy
Poster removing on Friday, afternoon	<u>C. Bittencourt</u> ¹ , M-A. Paul ² , E. Pollet ² , Ph. Dubois ² , and J-J. Pireaux ¹ ¹ Falcultés Universitaires Notre Dame de la Paix, Belgium ² Université de Mons-Hainaut, Belgium	Characterization of poly (L-Lactide) based nanocomposites
	<u>Gelson B. de Souza</u> ¹ , Carlos E. Foerster ² , Silvio Luiz R. da Silva ² and Carlos M. Lepienski ³ ¹ Universidade Estadual de Maringá, Brazil. ² Univ. Estadual de Ponta Grossa, Brazil. ³ Universidade Federal do Paraná, Brazil.	Determination of nanomechanical properties on rough surfaces
	<u>R. S. Silva</u> , D. R. M. Junior, H. D. Mikhail, Fanyao Qu, N. O. Dantas. Universidade Federal de Uberlândia, Brasil.	Optical and microscopy characterization of PbS semiconductors nanocrystals in oxide glass
	<u>Pilar Hidalgo</u> ¹ ; Douglas Gouvêa ¹ , Javier Ramirez-Fernandez ² ; Henrique Peres ² . ¹ Depto de Engenharia Metalúrgica e de Materiais, USP, Brazil ² Depto de Engenharia de Sistemas Eletrônicos, USP, Brazil	Nanometric tin oxide films doped with nickel for environment monitoring of sulfur dioxide contamination
	<u>José Ricardo C. Salgado</u> and Ernesto R. Gonzalez Instituto de Química de São Carlos – USP, Brasil.	Characterization of Pt-Co/C electrocatalysts by X-ray diffraction and high resolution transmission electron microscopy

	<p>Hercília Maria Lins Rolim¹, Mariane Cajubá de Britto Lira¹, Robson Amaro Augusto da Silva¹, Fernando Brederodes de Queiroz², Rosa Maria Souto Maior², and <u>Nereide Stela Santos Magalhães</u>¹</p> <p>¹Laboratório de Imunopatologia Keizo-Asami, UFPE, Brazil. ²Laboratório de Síntese de Novos Materiais Orgânicos, UFPE, Brazil</p>	<p>Lectin conjugated-liposomes as nanosystems for drug targeting</p>
	<p>André Vitor Chaves de Andrade¹, Cleverson Weber², Ariádne Cristiane Cabral da Cruz², Carlos de Oliveira Paiva Santos³, Vegner Hizau dos Santos Utuni³, Christiane Philippini Ferreira Borges⁴, Lexandra Novaki⁴, Salvador Martinez Manent⁵, <u>José Caetano Zurita da Silva</u>⁴</p> <p>¹Departamento de Física-UEPG, ²Centro Interdisciplinar de Pesquisa e Pós-Graduação-CIPP-UEPG, ³Departamento de Química-UEPG, Av. Carlos Cavalcante, 4748-84030-900 Ponta Grossa-PR, Brasil, ⁴Instituto de Química-UNESP-Físico-Química-R. Francisco Degni, s/n. 14800-900-Araraquara-SP, ⁵Universidade de Barcelona-Facultat de Geologia, Calle Martí à Franquês, s/n. 08028 Barcelona-Spain.</p>	<p>Synthesis of hydroxylapatite nanoparticles and their characterization using the Rietveld-maximum entropy method</p>
	<p>Fábio de Lima Leite^{1, 3}; Carlos Eduardo Borato^{1,3}; Antônio Riul Júnior²; Osvaldo N. Oliveira Jr¹; Rubens Bernardes Filho³, and <u>Luiz Henrique Capparelli Mattoso</u>^{1,3}</p> <p>¹Universidade de São Paulo, Brazil ²Universidade Estadual Paulista, Brazil ³Embrapa Instrumentação Agropecuária, Brasil.</p>	<p>Using force spectroscopy in the characterization of taste sensors from nanostructured films</p>
	<p><u>D. R. Santos Jr.</u>, Qu.Fanyao, R. H. Oliveria, B. B. Rodrigues, and N.O. Dantas Universidade Federal de Uberlândia, Brasil</p>	<p>Colloidal stability in magnetic fluid: Interplay of permanent magnetization of nanoparticles and an external magnetic field</p>