



## **SYMPOSIUM E**

### **Current Trends in Nanotechnologies**

May 30 – June 2, 2000

#### **Symposium Organizers:**

**Giovanni Marletta**, Università di Catania, Italy

**Gabriel M.Crean**, National Microelectronics Research Centre, Cork, Ireland

**José Manuel Martinez-Duart**, University of Cantoblanco, Madrid, Spain

**Hermann Grimmeiss**, University of Lund, Sweden

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# E-MRS 2000 SPRING MEETING

## Symposium E

**Tuesday May 30, 2000**  
Mardi 30 mai 2000

**Morning**  
Matin

### Session I: Theory and Fundamental Properties

- E-I.1** 9:00 Invited **OPENING LECTURE**  
NANOTUBES, NANOSCIENCE AND NANOTECHNOLOGY, **M.L. Cohen**, UCLA and Lawrence Berkeley National Laboratory, USA
- E-I.2** 9:50  
QUANTUM TOPOLOGICAL THEORY AND COMPUTER SIMULATION OF CONFINEMENT-INDUCED ELECTRON CONDUCTANCE IN NANOSTRUCTURES, **S.A. Beznosyuk**, D.A. Mezentsev, Altai State University, Dimitrov Street, 66, 656099 Barnaul, Russia
- E-I.3** 10:10  
ATOM-BY-ATOM CHEMISTRY OF INTERFACES: SIMULATIONS AND EXPERIMENTS, O.C. Hellman and D.N. Seidman, Department of Materials Science and Engineering, Northwestern University, Evanston IL 60208, USA
- 10:30 **BREAK**
- E-I.4** 11:00 Invited  
QUANTUM BILLIARDS AND TRANSPORT, **K.-F. Berggren**, Dept. of Physics and Measurement Technology, Linköping University, Sweden
- E-I.5** 11:40  
INTERACTION BETWEEN SPIN WAVES AND ELECTRONS IN THE YIG - AMORPHOUS CARBON STRUCTURE WITH Cu AND Co NANOCCLUSERS, **V.I. Siklitsky**, T.K. Zvonariova, Ioffe Institute, 194021 St Petersburg, Russia and L.V. Lutsev, S.V. Yakovlev, Research Institute "Domen", St Petersburg, Russia
- E-I.6** 12:00  
OPTICALLY DETECTED ORBITAL RESONANCE STUDIES OF CORE-SHELL NANOCRYSTALS, **A. Glozman** and E. Lifshitz, Department of Chemistry and Solid State Institute, Technion, Haifa 32000, Israel
- E-I.7** 12:20  
LOW FREQUENCY RAMAN SCATTERING DURING MELTING OF TIN NANOPARTICLES, A. Li Bassi and C.E. Bottani, INFN-Dipartimento di Ingegneria Nucleare, Politecnico di Milano, Via Ponzio 34/3, 20133 Milano, Italy; A. Stella and P. Tognini, INFN-Dipartimento di Fisica "A.Volta", Università degli Studi di Pavia, Via A. Bassi 6, 27100 Pavia, Italy; P. Cheyssac and R.Kofman, Laboratoire de Physique de la Matière Condensée, Université de Nice-Sophie Antipolis 06108 Nice Cedex, France
- E-I.8** 12:40  
SUPPRESSION OF LARGE CURRENT FLUCTUATIONS IN 2D NANOMETER-SIZE MULTIJUNCTIONS, A.S. Cordan, Y. Leroy and A. Goltzene, ENSPS - ERM/PHASE, Bd Sébastien Brant, 67400 Illkirch, France
- 13:00** **LUNCH**

**Tuesday May 30, 2000**

Mardi 30 mai 2000

**Afternoon**

Après-midi

**Session II: Joint with symposium R**  
**Nanostructured materials through irradiation**

- E-II.1** 14:00 **Invited** NANOFABRICATION FOR PHOTONIC APPLICATIONS COMBINING PULSED LASER DEPOSITION AND FOCUSED ION BEAM TECHNOLOGIES, R. Lopez, R. Ruiz, L. Shen, **R.F. Haglund, Jr.**, R.A. Weller and L.C. Feldman, Vanderbilt University, NashvilleTenn., TN 37235, USA
- E-II.2** 14:40 OPTICAL AND STRUCTURAL PROPERTIES OF Si NANOCRYSTALS ARRAYS FORMED BY ULTRA LOW ENERGY Si IMPLANTS INTO THIN GATE OXIDES, S. Coffa, E. Castagna, C. Bongiorno, CNR-IMETEM, Stradale Primosole 50, 95121 Catania, Italy, D. Patti, STMicroelectronics, Stradale Primosole 50, 95121 Catania, Italy
- E-II.3** 15:00 **Invited** NANOCOMPOSITE MATERIALS FORMED BY ION IMPLANTATION: RECENT DEVELOPMENTS AND FUTURE OPPORTUNITIES, **A. Meldrum**(1), C.W. White(2), E. Sonder(2), R.A. Zuhr(2), S.P. Withrow(2), S.Honda(2), J.D. Budai(2) and L.A. Boatner(2), (1)Dept. of Physics, University of Alberta ,Edmonton, AB T6G 2J1, Canada, (2)Solid State Division, Oak Ridge National Laboratory, Oak Ridge TN 37831, USA
- E-II.4** 15:40 NANOMETRIC MODIFICATIONS ALONG THE PATH OF ENERGETIC PROJECTILES, A. Dunlop and G. Jaskierowicz, Laboratoire des Solides Irradiés, Commissariat à l'Energie Atomique/ Ecole Polytechnique, 91128 Palaiseau, France and M. Kopcewicz, Institute of Electronic Materials Technology, Wolczynska 133, 01909 Warszawa, Poland
- 16:00 **BREAK**
- E-II.5** 16:30 **Invited** FUNCTIONAL NANOCRYSTAL ARRAYS FOR FUTURE ELECTRONIC AND PHOTONIC APPLICATIONS, **H.A. Atwater**, Thomas J. Watson Laboratories of Applied Physics California Institute of Technology, Pasadena CA 91125, USA
- E-II.6** 17:10 INFLUENCE OF ANNEALING ATMOSPHERE ON THE EVOLUTION OF METAL AND METAL-ALLOY NANOCLUSTERS PRODUCED BY ION IMPLANTATION IN SILICA, G. Battaglin(1), E.Cattaruzza(1), G. De Marchi(2), F. Gonella(1), G. Mattei(2), P. Mazzoldi(2), A. Miotello(3), C. Sada(2), (1) INFM, Dipartimento di Chimica Fisica, Università di Venezia, CalleLarga Santa Marta 2137, 30123 Venezia, Italy, (2) INFM, Dipartimento di Fisica, Università di Padova, via Marzolo 8, 35131 Padova, Italy, (3) INFM, Dipartimento di Fisica, Università di Trento, via Sommarive, 38050 Povo, Italy
- E-II.7** 17:30 **Invited** IRRADIATION-INDUCED MAGNETIC PATTERNING IN MAGNETIC MULTILAYERS, **D. Ravelosona**, T. Devolder, C. Chappert, Institut d'Electronique Fondamentale, Université Paris-Sud, 91405 Orsay Cedex, France, H. Bernas, Centre de Spectrométrie Nucléaire et de Spectrométrie de Masse, Université Paris-Sud, 91405 Orsay Cedex, France, J. Ferré, J.P. Jamet, Laboratoire de Physique des Solides, Université Paris-Sud, 91405 Orsay Cedex, France, Y. Chen, Laboratoire de Micro-structures et Microélectronique, 196 rue H. Ravera, BP 107, 92225 Bagneux, France
- E-II.8** 18:10 NANOSTRUCTURE AND MAGNETIC PROPERTIES OF ALLOY-BASED NANOPARTICLES DISPERSED IN SILICA MATRIX PREPARED BY ION-IMPLANTATION AND SOL-GEL TECHNIQUES, C. de Julian Fernandez, G. Mattei, P. Mazzoldi, S. Lo Russo, INFM - Univ. di Padova, Dip. di Fisica, Marzolo 8, 35131 Padova, Italy; C. Battaglin, E. Cattaruzza, F. Gonella, INFM Dip. di Chimica-Fisica, Univ. di Venezia, Calle Larga Santa Marta 2137, 0123 Venezia, Italy; C. Sangregorio, Dip. di Chimica, Univ. di Firenze, via Maragliano 75, 50144 Firenze, Italy; F. D'Orazio, F. Lucari, INFM Dip. Fisica, Univ. L'Aquila, via Vetoio, 67100 L'Aquila, Italy and G. De, Central Glass & Ceramic Research Institute 196, Raja S. C. Mullick Road, Calcutta 700 0032, India

### Session III: Compound semiconductor nanostructures

- E-III.1** 14:40 Invited DETECTION OF SPIN-POLARIZED ELECTRONS INJECTED ACROSS A SEMICONDUCTOR INTERFACE, **G. Schmidt**, University of Würzburg, Würzburg, Germany
- E-III.2** 15:20 SELFORGANIZED NANOCLUSTERS OF SEMICONDUCTOR COMPOUNDS ON VICINAL SURFACE OF Si AND ITS INFLUENCE ON CARRIER RECOMBINATION IN Si, **J.Vaitkus**, E.Gaubas, V.Kazlauskiene, A.Mazeikis, J.Miskinis, J.Sinius Dept. of Semiconductor Physics, and Institute of Materials Science and Applied Research, Vilnius Univ., Sauletekio al. 9-III, 2040 Vilnius, Lithuania.
- E-III.3** 15:40 SOLVOTHERMAL FABRICATION OF II-VI SEMICONDUCTOR NANOCRYSTALLITES CdE(Cd=S,Se,Te)AND MORPHOLOGICAL CONTROL , Shu-Hong Yu, Jian Yang, Zhao-Hui Han, Yi-Tai Qian and Yu-Heng Zhang, Department of Chemistry and Structure Research Laboratory, University of Science and Technology of China, Hefei, Anhui 230026, People's Republic of China
- E-III.4** 16:00 CuSe NANOPARTICLES IN SOL-GEL SILICA GLASSES, V.S. Gurin; Physico-Chemical Research Institute, Belarusian State University, Minsk, 220080, Belarus; V.B. Prokopenko, Gomel State University, Gomel, 246699, Belarus; A.A. Alexeenko, Gomel State Technical University, Gomel, 246746, Belarus; S. Wang, Department of Nuclear Engineering & Radiological Sciences, University of Michigan, Ann Arbor MI 48109, USA
- 16:20 **BREAK**
- E-III.5** 16:50 Invited GENERATION OF SINGLE ELECTRONS BY GHz SURFACE ACOUSTIC WAVES, **M. Pepper**, Cambridge, UK
- E-III.6** 17:30 CdZ-ZnS NOPARTICLES GROWN IN MOR TYPE ZEOLITES, M. Hernandez, M.M. Garcia, H. Villavencio\*, O. Sanchez\*\*, J.R. Martin and J.M. Martinez-Duart, Universidad Autonoma de Madrid, Facultad de Ciencias, C-XII, Cantoblanco, 28049 Madrid, Spain, \*Instituto Superior Pedagogico "E.J. Varona", Facultad de Ciencias, Ciudad Libertad, Marianoa, La Habana, Cuba, \*\* Instituto de Ciencia de Materials de Madric, CSIC, Cantoblanco, 28049 Madrid, Spain
- E-III.7** 17:50 CdS NANOCRYSTALS FORMED IN SiO<sub>2</sub> SUBSTRATE BY ION IMPLANTATION, U.V. Desnica<sup>1</sup>, M. Ivanda<sup>1</sup>, O. Gamulin<sup>2</sup>, A.M. Tonejc<sup>3</sup>, C.W. White<sup>4</sup>, E. Sonder<sup>4</sup> and R.A. Zuhr<sup>4</sup>, 1R. Boskovic Institute, Physics Department, Bijenicka 54, 10000 Zagreb, Croatia, 2School of Medicine, Zagreb University, Salata 3, 10000 Zagreb, Croatia, 3Department of Physics, Zagreb University, 10000 Zagreb, Croatia; 4Oak Ridge National Laboratory, P.O. Box 2008, Oak Ridge TN 37831, USA
- E-III.8** 18:10 A NOVEL TYPE OF A CHEMICAL SENSOR: A MOLECULAR CONTROLLED GaAs BASED SEMICONDUCTOR DEVICE. **A. Haran\***, R. Benshafut\*\*, D. Cahen\*\*\*, R. Naaman\*, A. Shanzer\*\*\*\*, Dm. Shvarts\*\*, \*\*Amos Ltd., Rehovot, 76100 Israel, \*Department of Chemical Physics, \*\*\*Department of Materials and Interfaces, \*\*\*\*Department of Organic Chemistry, Weizmann Institute of Science, Rehovot 76100 Israel

**Wednesday May 31, 2000**

Mercredi 31 mai 2000

**Afternoon**

**Après-midi**

**Session IV: Nanopatterning and nanolithography**

- E-IV.1** 14:00 Invited NEW PROPERTIES OF AFM GENERATED NANOSTRUCTURES, **K. Ensslin**, ETH, Zürich, Switzerland
- E-IV.2** 14:40 TOWARDS NANOLITHOGRAPHY : PHOTOPOLYMERIZATION BY OPTICAL FIELD ENHANCEMENT IN THE VICINITY OF A CONDUCTING TIP UNDER LASER ILLUMINATION, G. Wurtz, R. Bachelot, F. Hadhili and P. Royer, LNIU,UTT, 12 rue Marie Curie - BP 2060 - 10010 Troyes Cedex, France, C. Ecoffet, C. Triger, DPG, ENSCMu, CNRS, UMR 7525, 3 rue Alfred Werner, 68093 Mulhouse, France
- E-IV.3** 15:00 PHOTORESISTIVE MATERIALS FOR 157NM PHOTOLITHOGRAPHY, E. Sarantopoulou and A.C. Cefalas, National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute, 48 Vassileos Constantinou Aven., Athens 11635 Greece, P. Argitis and E. Gogolides, Institute of Microelectronics, NCSR "Demokritos", Agia Paraskevi, Attiki, 15310 Greece
- 15:20 **BREAK**
- E-IV.4** 15:40 Invited LATERAL ORDERED NANOSTRUCTURES IN THIN ORGANIC FILMS, **Li Feng Chi**, Dept. of Physics, University of Muenster, Muenster, Germany
- E-IV.5** 16:20 NANOPATTERNING BY INDUCED DEWETTING OF SUPRAMOLECULAR THIN FILMS, M. Cavallini, F. Biscarini, R. Zamboni, CNR-Istituto di Spettroscopia Molecolare, Via P. Gobetti 101, I-40129 Bologna, D. Timpel, F. Zerbetto, Dip. Chimica "G. Ciamician", Via Selmi 2, I-40100 Bologna, Italy, F. Gatti, D. Leigh, +++, CSMC, Dept. Chemistry, Univ. of Warwick, Coventry, UK
- E-IV.6** 16:40 OPTICAL NEAR-FIELD NANOLITHOGRAPHY USING ORGANIC AND INORGANIC PHOTORESISTS, S. Noach, M. Manevich and N.P. Eisenberg, Department of Electro-optics, Jerusalem College of Technology, Jerusalem 91160, Israel, E.P. Fokin and T.V. Mihalina, Institute of Organic Chemistry, Academia of Russia, Novosibirsk, Russia
- 17:00 – 19:00 **POSTER SESSIONS**

**Poster session I:**

**Theory and Fundamental Properties**

- E-I/P01** THE OBSERVABILITY OF POORLY BOUND POWDER-LIKE MATERIAL ON HARD SURFACE BY ATOMIC FORCE MICROSCOPY, A. Mechler(a), J. Kokavecz(a) and P. Heszler(b)#, (a) Dept. of Optics and Quantum Electronics, JATE University, P.O. Box 406, 6701 Szeged, Hungary ; (b) Research Group on Laser Physics of the Hungarian Academy of Sciences, P.O. Box 406, 6701 Szeged, Hungary ; # Current address: ngstr^mlaboratoriet, Box 538, 751 21 Uppsala, Sweden
- E-I/P02** LINEAR AND NONLINEAR OPTICAL CHARACTERIZATION OF Ga NANOPARTICLE MONOLAYERS, A.M. Malvezzi, INFN - Dip. Elettronica, Universita di Pavia, Via Ferrata 1, 27100 Pavia, Italy; M. Patrini, A. Stella and P. Tognini, INFN - Dip. Fisica "A. Volta" Universita di Pavia, Via Bassi 6, 27100 Pavia, Italy; P. Cheyssac and R. Kofman, Laboratoire de la Physique de la Matière Condensée, URA 190, Université de Nice, Sophia Antipolis, Nice Cedex, France
- E-I/P03** THE EFFECT OF SELF ASSEMBLED NANOMETRIC SPACERS ON SURFACE ENHANCED RAMAN SPECTRA OF TERTHIOPHENE ULTRATHIN FILMS, G. Compagnini, A. De Bonis, R.S. Cataliotti, Dipartimento di Scienze Chimiche, Universita di Catania, Viale A.Doria 6, 95125 Catania, Italy
- E-I/P04** SUGANO-SHINODA EXCITON IN QUASIPLANE SUPERLATTICE OF CYLINDRIC QUANTUM DOTS, M. Tkach, O. Makhanets, V. Zharkoy, Chernivtsi State University, Chernivtsi, Ukraine

- E-I/P05** ELECTRON AND HOLE RESONANCE STATES IN MULTISHELL QUANTUM DOTS, M.Tkach, V.Holovatsky, O.Voitsekhivska, M.Mikhalyova, Chernivtsi State University, Chernivtsi, Ukraine
- E-I/P06** THE MICROSCOPIC THEORY OF RADIATIVE RECOMBINATION IN SEMICONDUCTOR QUANTUM WELLS, E.B. Dogonkine, A.S. Polkovnikov, G.G. Zegrya, Ioffe Physico-Technical Institute, Ul. Politechnicheskaya 26, 194021 St. Petersburg, Russia
- E-I/P07** FERROELECTRIC PHASE TRANSITIONS IN ULTRATHIN FILMS STUDIED IN FRAMEWORK OF DISCRETE PHI-4 MODEL, V.V. Savkin, A.N. Rubtsov, Department of Physics, Moscow State University, 119899 Moscow, Russia
- E-I/P08** STM-INDUCED LIGHT EMISSION BY SELF-ASSEMBLED METALLIC NANOSPHERES, F. Sully\*, A.O. Gusev\*, A. Taleb, F. Charra\*, M.-P. Pileni, \*CEA-Saclay, Service de Recherche sur les Surfaces et l'Irradiation de la Matière, 91191 Gif-sur-Yvette Cedex, France Université P. et M. Curie, Laboratoire SRSI, URA CNRS 1662, Bât. F, 4 place Jussieu, 75005 Paris, France and CEA-Saclay, Service de Chimie Moléculaire, 91191 Gif-sur-Yvette Cedex, France
- E-I/P09** ELECTRONIC PROPERTIES OF CLUSTERS AND NANOSTRUCTURES, F. Torrens, Departament de Química Física, Facultat de Química, Universitat de Valencia, Dr. Moliner 50, 46100 Burjassot (Valencia), Spain
- E-I/P10** BRILLOUIN SCATTERING INVESTIGATION OF MELTING IN Sn NANOPARTICLES, C.E. Bottani, A. Li Bassi, Politecnico di Milano, Italy; R. Tanner, University of Durham, UK; A. Stella, P. Tognini, Università di Pavia, Italy; P. Cheyssac, R. Kofman Université de Nice-Sophia Antipolis, France
- E-I/P11** THIN FILM PHASES AT REACTIVE INTERFACES AS OBJECTS OF NANOPHYSICS AND NANOTECHNOLOGIES, N.I. Plusnin, Institute of Automation and Control Processes, FEB RAS, Radio 5, 690041 Vladivostok, Russia
- E-I/P12** ESR-ABSORPTION TIME EVOLUTION IN QUASIONEDIMENSIONAL CONDUCTORS, D.P. Yearchuck, Byelarussian State University, Physics Department, Minsk, RB
- E-I/P13** QUANTUM COMPUTER MODELING OF REALISTIC MANY-BODY INTERATOMIC POTENTIALS IN NANOSTRUCTURES BY QUANTUM TOPOLOGICAL METHOD OF DENSITY FUNCTIONAL THEORY, M.S. Zhukovsky, T.M. Zhukovsky, M. Starostenkov, Altai Technical State University, Lenina Street, 46, 656099 Barnaul, Russia and S.A. Beznosyuk, Altai State University, Dimitrov Street, 66, 656099 Barnaul, Russia
- E-I/P14** INFRARED ABSORPTION IN QUASIONEDIMENSIONAL CARBYNOID CONDUCTORS, Y.P. Kudryavtsev, A.N. Nesmeyanov Institute of Organo-Element Compounds, RAS, 117813 Moscow, Russia, D.P. Yearchuck, Byelarussian State University, Physics Department, 220080 Minsk, Belarus
- E-I/P15** TRAPPING LEVELS IN  $(nc\text{-Si/CaF}_2)_n$  MULTIQUANTUM WELLS, V. Ioannou-Sougleridis and A.G. Nassiopoulou IMEL/NCSR Demokritos, P.O.Box 60228, 153 10 Aghia Paraskevi, Athens, Greece, and F. Bassani F. Arnaud d'Avitaya CRMC<sub>2</sub>/CNRS, Campus de Luminy case 913, 13288 Marseille cedex 09, France
- E-I/P16** POLARIZATION METHOD FOR METROLOGY OF QUANTUM-SIZE STRUCTURES ON A NANOSCALE LEVEL, V.G. Litovchenko, D.V. Korbutyak, Yu.V. Kryuchenko and S.G. Krylyuk, Institute of Semiconductor Physics National Academy of Sciences of Ukraine, Prospect Nauki 45, 03028 Kiev 28, Ukraine
- E-I/P17** OBSERVATION OF RANDOM LASER ACTION IN DISORDERED NONANOSTRUCTURED MEDIA, R.P.H. Chang, H. Cao, S.T. Ho, E. Seelig, Y.G. Zhao, Materials Research Center, Northwestern University, Evanston IL 60208, USA
- E-I/P18** ENHANCEMENT OF RED EMISSION ( ${}^4F_9/2 \rightarrow {}^2E_1/2$ ) VIA UPCONVERSION IN  $\text{Er}^{3+}$  DOPED  $\text{Y}_2\text{O}_3$  NANOCRYSTALS, J. A. Capobianco(a,\*), F. Vetrone(a), G. Tessari(b), A. Speghini(b) and M. Bettinelli(b), (a)Department of Chemistry and Biochemistry, Concordia University, 1455 de Maisonneuve Blvd. W., Montreal, Canada, H3G 1M8, (b)Dipartimento Scientifico e Tecnologico, Università di Verona, Ca' Vignal, Strada Le Grazie 15, 37134 Verona, Italy

**E-I/P19** HIGH RESOLUTION NEAR-FIELD CATHODOLUMINESCENCE MICROSCOPY, J. L. Bubendorff, M. Troyon, Université de Reims-Champagne-Ardennes, UTAP-LMET, 21 rue Clément Ader, 51685 REIMS Cedex, France

**E-I/P20** THE ROLE OF SIMPLIFIED ELECTRONIC MODELS FOR THE STUDY OF LINEAR AND NONLINEAR ELECTROMAGNETIC RESPONSE PROPERTIES OF NANOSCALE PARTICLES, G.P. Arrighini, S. Bruzzone, C. Guidotti, Dipartimento di Chimica e Chimica Industriale, Università di Pisa, via Risorgimento 35, 56126 Pisa, Italy, N. Durante, Istituto di Chimica quantistica ed Energetica Molecolare del CNR, Via Alfieri 1, 56010 Pisa, Italy and U.T. Lamanna, Dipartimento di Chimica, Università di Bari, Via Orabona 4, 70126 Bari, Italy

## Poster session II:

### Compound semiconductor nanostructures

- E-II/P01** PHOTOLUMINESCENCE PROPERTIES OF CdSe NANOCRYSTALS EMBEDDED IN GLASS MATRICES, M.B. Derbali, Institut Préparatoire aux Etudes d'Ingénieurs de Monastir, 5019 Monastir, Tunisia; K. Khirouni, LPS, Faculté des Sciences de Monastir, 5019 Monastir, Tunisia
- E-II/P02** EXPERIMENTAL DETERMINATION OF THE ANDREEV REFLECTION PROBABILITY USING BALLISTICALLY POINT CONTACT SPECTROSCOPY, M. Jakob, H. Stahl, J. Knoch, J.Appenzeller and B. Lengeler, II. Physikalisches Institut, RWTH Aachen, Templergraben 55, 52056 Aachen, Germany
- E-II/P03** EFFECT OF INTER-DOT ELECTRONIC COUPLING ON LASER GAIN IN InAs/GaAs QUANTUM DOT ENSEMBLE, A. Sugimura, I. Tadamasu, I. Umezu, Department of Applied Physics, Konan University, Kobe 658-8501, Japan
- E-II/P04** SYNTHESIS AND CHARACTERIZATION OF NANO-SCALE ALUMINIUM NITRIDE PRODUCED FROM THE VAPOR PHASE, B.C. Dilelo, F.J. Moura and I.G. Solerzano, Department of Materials Science and Metallurgy, DCMM, PUC-Rio, Rio de Janeiro, Brazil
- E-II/P05** TRANSIENT AND PERMANENT NONLINEAR RESPONSE OF SOL-GEL SILICA GLASSES WITH COPPER SELENIDE NANOPARTICLES, K.V. Yumashev, N.N. Posnov, P.V. Prokoshin, International Laser Center, Belarusian State Polytechnical Academy, 65, F.Skaryna, Avenue, Bld. 17, 220027 Minsk, Belarus, V.S. Gurin, Physico-Chemical Research Institute, Belarusian State University, Minsk 220080, Belarus, V.B. Prokopenko, Gomel State University, Gomel 246699, Belarus, A.A. Alexeenko, Gomel State Technical University, Gomel 246746, Belarus
- E-II/P06** DYNAMICS OF HIGHLY EXCITED CHARGE CARRIERS IN CDS NANOCRYSTALLITES EMBEDDED INTO ZrO<sub>2</sub> FILMS, I. Mikulskas, R. Tomašinas, J.V. Vaitkus, Institute of Materials Science and Applied Research, Vilnius University, Sauletekio 10, 2040 Vilnius, Lithuania, C. Bovier, J.G. Dumas, Département de Physique des Matériaux, Université Claude Bernard Lyon I, UMR 5586, 43 Boulevard du 11 Novembre 1918, 69622 Villeurbanne Cedex, France, J. Mugnier, Laboratoire de Physico - Chimie des Matériaux Luminescents, Université Claude Bernard Lyon I, UMR 5620, 43 Boulevard du 11 Novembre 1918, 69622 Villeurbanne Cedex, France
- E-II/P07** FREE CARRIER AND EXCITON CONTRIBUTIONS TO THE PHOTOLUMINESCENCE OF GaAs QUANTUM WELLS EMBEDDED IN AlAs/GaAs SUPERLATTICES, V. Donchev, Tzv. Ivanov, K. Germanova, Faculty of Physics, Sofia University, 5, blvd. J. Bourchier, Sofia 1164, Bulgaria, I. Ivanov, Dept. of Physics and Measurement Technology, Linköping University, Linköping, Sweden
- E-II/P08** TECHNOLOGICAL ASPECTS OF FABRICATION OF SEMIMAGNETIC SEMICONDUCTOR NANOCRYSTALS, A.I. Savchuk, I.D. Stolyarchuk, S.V. Medynskiy, V.I. Fediv, Ye.O. Kandyba, Dept. of Phys. Electronics, University of Chernivtsi, 274012, Chernivtsi, Ukraine, A. Perrone, M.L. DeGiorgi, Dept. of Physics, University of Lecce, National Institute of Matter Physics, 73100 Lecce, Italy and P.I. Nikitin, General Physics Institute, 117942, Moscow, Russian Federation
- E-II/P09** OPTICAL PROPERTIES OF CdTe NANOPARTICLE THIN FILMS, S. Tripura Sundari, Sharat Chandra and G. Raghavan, Materials Science Division, Indira Gandhi Centre for Atomic Research, Kalpakkam, 603 102 Tamil Nadu, India
- E-II/P10** INVESTIGATION OF STRUCTURE OF POROUS GaAs, V. Jasutis, K. Grigoras, V. Pacebutas, J. Sabataityte, I. Simkiene, H. Tvardauskas, Semiconductor Physics Institute, A. Gostauto 11, 2600 Vilnius, Lithuania
- E-II/P11** FORMATION OF GaAs NANOCRYSTALS BY LASER ABLATION, E. Millon, LSMCL, Université Metz, IPREM, 1 bd Arago, 57078 Metz, France, J. Perrière, M. Morcrette, M. Chamarro, GPS Université Paris VII, Tour 23, 2 place Jussieu, 75251 Paris, France, C. Andrezza, CRMD Université Orléans, 1B rue de la Ferolerie, 45071 Orléans, France, T. Gacoin, LPMC, Ecole Polytechnique, 91128 Palaiseau, France

## Poster session III:

### Silicon-based nanosystems

- E-III/P01** ENHANCEMENT OF THE INTENSITY OF VIOLET AND GREEN PHOTOLUMINESCENCE FROM Ge<sup>+</sup>-ION IMPLANTED SiO<sub>x</sub>N<sub>y</sub> FILMS CAUSED BY HYDROSTATIC PRESSURE DURING ANNEALING, I.E. Tyschenko, K.S. Zhuravlev, E.N. Vandyshev, Institute of Semiconductor Physics, Novosibirsk, 630090, Russia, A. Misiuk, Institute of Electron Technology, Al.Lotnikow 46, Warsaw, Poland, L. Rebohle, W. Skorupa, Institute of Ion Beam Physics and Materials Research, Research Center Rossendorf, Inc. POB 510119, 01314 Dresden, Germany
- E-III/P02** NOVEL POROUS SILICON FORMATION TECHNOLOGY USING INTERNAL CURRENT GENERATION, A. Splinter, J. Starmann, W. Benecke, Institute for Microsensors, -actuators, and -systems (IMSAS), University of Bremen, Germany
- E-III/P03** ROLE OF SURFACE TENSION IN SILICON NANOSTRUCTURES A. Klimovskaya, I. Ostrovskii, Ju. Driga, Institute of Semiconductor Physics, Integrated Microelectronics, 45 Prospect Nauki, 252028 Kyiv, Ukraine
- E-III/P04** SPECTROSCOPY OF SURFACE STATES IN METAL - POROUS SILICON - SILICON STRUCTURES, O.V. Tretyak, V.A. Vikulov, V.A. Skryshevsky, V.M.Zinchuk, P.V. Zolotareno, Radiophysics Department, Kiev Shevchenko University, 64 Volodimirskaya, 01033 Kiev, Ukraine and E. Souteyrand, J.-R. Martin, IFoS-Groupe PCI, Ecole Centrale de Lyon, 36 av. Guy de Collongue, BP 163, 69131, Ecully Cedex, France
- E-III/P05** TUNNELING CURRENT OSCILLATIONS ON PARTIALLY OXIDIZED SI(111)- AND SI(100) SURFACES AND AT AU-NANOCLUSTERS DEPOSITED ON THESE SURFACES, F. Xie (1,2) and P. von Blanckenhagen (1), (1) Forschungszentrum Karlsruhe, Institut für Nanotechnologie, PO Box 3640, 76021 Karlsruhe, Germany, (2) State Key Laboratory for Surface Physics, Institute of Physics, Chinese Academy of Sciences, Beijing 100080, China
- E-III/P06** SURFACE MORPHOLOGY AND PHOTOLUMINESCENCE OF POROUS SILICON CARBIDE, F. Hassen, R. Mghaieth and H. Maaref, Laboratoire de Physique des Semiconducteurs Faculté des Sciences, 5000 Monastir, Tunisie; R. Madar, LMGP, UMR 5628, CNRS-INPG, ENSPG BP46, 38402 Saint Martin d'Hères, France
- E-III/P07** CORRECTION OF THE SI NANOGRAIN SIZE DISTRIBUTION MEASURED BY TRANSMISSION ELECTRON MICROSCOPY, C. Bongiorno, Y. Liao, S. Lombardo, C. Spinella, CNR-IMETEM, Catania, Italy, C. Gerardi, STMicroelectronics, Catania, Italy
- E-III/P08** MODELLING OF POROUS SILICON FORMATION PROCESS, M. Haurylau, Belarussian State University of Informatics and Radioelectronics, P.Brovka 6, 220027 Minsk, Belarus
- E-III/P09** THE PRODUCTION OF A NOVEL STAIN ETCHED POROUS SILICON, METALLISATION OF THE POROUS SURFACE AND APPLICATION IN HYDROCARBON SENSORS, A.N. Parbukov, S.C. Bayliss, Solid State Research Centre, Faculty of Applied Science, De Montfort University, The Gateway, Leicester, LE1 9BH, UK, V.I. Beklemyshev, V.M. Gontar, I.I. Makhonin, State Research Institute for Problems in Physics named after F.V. Lukin, Zelenograd, Moscow, Russia, S.A. Gavrilov, Moscow State Institute of Electronic Engineering (Technical University), Zelenograd, Moscow, Russia
- E-III/P10** LUMINESCENCE PROPERTIES OF NANOCRYSTALLINE SILICON FILMS, A.M. Ali, T. Inokuma, Y. Kurata and S. Hasegawa, Department of Electrical and Computer Engineering, Faculty of Engineering, Kanazawa University, Kanazawa, Ishikawa 920-8667, Japan
- E-III/P11** EFFECTS OF ANNEALING ON LUMINESCENCE PROPERTIES OF SI NANOCRYSTALLITES PREPARED BY PULSED LASER ABLATION IN INERT GAS, I. Umezu, G. Yamazaki, T. Yamaguchi and A. Sugimura, Department of Applied Physics, Konan University, Kobe 658-8501, Japan and T. Makino, Y. Yamada, N. Suzuki and T. Yoshida Matsushita Research Institute Tokyo, Inc., Kawasaki 214-8501, Japan
- E-III/P12** POROUS SILICON – SILICON WAFER INTERFACE: INVESTIGATION OF SURFACE RECOMBINATION, G. Kopitkovas, I. Mikulskas, R. Tomašinas, Institute of Material Science and Applied Research, Vilnius University, Saulėtekio 10, 2040 Vilnius, Lithuania and K. Grigoras, I. Imkien, Semiconductor Physics Institute, Gostauto 11, 2600 Vilnius, Lithuania

- E-III/P13** STUDY ON HYDROGEN REACTIVITY WITH SURFACE CHEMICAL SPECIES OF NANOCRYSTALLINE POROUS SILICON, Le T.T. Tuyen, Ngo T.T. Tam, Nguyen H. Quang, Nguyen X. Nghia, Dao D. Khang, and Phan H. Khoi, Institute of Materials Science, NCST, Hoang Quoc Viet Str., Cau giay Distr., Hanoi, Vietnam
- E-III/P14** NANOCRYSTALLINE P-DOPED SILICON FILMS PRODUCED BY HOT WIRE PLASMA ASSISTED TECHNIQUE, I. Ferreira, R. Martins, A. Cabrita, E. Fortunato, P. Vilarinho, CENIMAT, Departamento de Ciencias dos Materiais da Faculdade de Ciencias e Tecnologia da Universidade Nova de Lisboa and CEMOP-UNINOVA, Quinta da Torre, 2825 Monte de Caparica, Portugal
- E-III/P15** LARGE AREA P-TYPE SILICON FILMS PRODUCED BY HOT WIRE TECHNIQUE, I. Ferreira, R. Martins, A. Cabrita, E. Fortunato, P. Vilarinho, CENIMAT, Departamento de Ciencias dos Materiais da Faculdade de Ciencias e Tecnologia da Universidade Nova de Lisboa and CEMOP-UNINOVA, Quinta da Torre, 2825 Monte de Caparica, Portugal
- E-III/P16** NANOSCALE THICKNESS FILMS OF Cr AND CrSi<sub>2</sub> ON Si (111), N.I. Plusnin and A.P. Milenin, Institute for Automation and Control Processes, FEB RAS, Radio 5, 690041 Vladivostok, Russia

**Thursday June 1, 2000**  
Jeudi 1er juin 2000

**Morning**  
**Matin**

**Session V: Insulating and metallic nanocomposites, nanoporous structures**

- E-V.1** 9:00 Invited INNOVATIVE NANOPOROUS MATERIALS: METAL ALUMINOPHOSPHATES, **S. Coluccia**, University of Torino, Torino, Italy
- E-V.2** 9:40 PREPARATION OF POLYMERIC AND METALLIC NANOSTRUCTURES USING A TEMPLATE-BASED DEPOSITION METHOD, S. Demoustier-Champagne, P.-Y. Stavaux, M. Delvaux, S. Cuenot, B. Nysten, Université catholique de Louvain, Unité de Physique et de Chimie des Hauts Polymères, Place Croix du Sud 1, 1348 Louvain-la-Neuve, Belgium
- E-V.3** 10:00 NANOSTRUCTURING OF TRANSITION METAL DICHALCOGENIDE INTERCALATION PHASES BY SCANNING FORCE MICROSCOPY, S. Gunst<sup>1</sup>, A. Klein<sup>1</sup>, W. Jaegermann<sup>1</sup>, Y. Tomm<sup>2</sup>, H. J. Crawack<sup>2</sup>, H. Jungblut<sup>2</sup>; <sup>1</sup>Darmstadt University of Technology, Department of Material Science, Surface Science Institute, Petersenstr. 23, 64287 Darmstadt, Germany; <sup>2</sup>Hahn-Meitner-Institut, Glienicker Str. 100, 14109 Berlin, Germany
- E-V.4** 10:20 SHAPING NANOPARTICLES AND THEIR OPTICAL SPECTRA WITH PHOTONS, J. Bosbach, T. Wenzel, A. Goldmann, F. Stietz and F. Träger, Experimentalphysik I, Universität Kassel, Heinrich-Plett-Str.40, 34132 Kassel, Germany
- 10:40 **BREAK**
- E-V.5** 11:00 Invited RECENT PROGRESS OF NANOTECHNOLOGIES OF THIN FILMS FOR INDUSTRIAL APPLICATIONS, **Y. Taga**, Toyota Research Laboratory, Nagoya, Japan
- E-V.6** 11:40 ULTRATHIN SEMICONDUCTOR FILMS SELF-ASSEMBLED FROM NANOBLOCKS AND MOLECULES, N. Kovtyukhova, Institute of Surface Chemistry, 252022 Kiev, Ukraine, E. Buzaneva, A.Gorchinsky, Kiev T. Shevchenko University, 252017 Kiev, Ukraine, P. Ollivier, B. Martin, C.Waraksa, T.Mallouk, The Pennsylvania State University, 16802 PA, USA
- E-V.7** 12:00 AL DOTS HEXAGONAL LATTICE FORMATION BY SELF-ORGANIZATION, Shoso Shingubara, Murakami, H.Sakae, and T. Talahagi, Hiroshima University, Dept. of Electrical Engineering, 1-4-1, Kagamiyama, Higashi-Hiroshima, 739-8527, Japan
- E-V.8** 12:20 ELECTRICAL TRANSPORT AND AFM MICROSCOPY ON V<sub>2</sub>O<sub>5-x</sub>-POLYANILINE NANORODS N. Ferrer-Anglada, Universitat Politècnica de Catalunya, Girona, Spain
- E-V.9** 12:40 3D SYSTEM OF "SILICON-PLATINUM" NANOSTRUCTURES IN OPAL MATRIX, D.A. Kurdyukov, N.A. Feoktistov, V.G. Golubev, A.B. Pevtsov, L.M. Sorokin, Ioffe Physico-Technical Institute, RAS, 194021 St. Petersburg, Russia; J.L. Hutchison, J. Sloan, Department of Materials, Oxford University, Parks Road, Oxford OX1 3PH, UK

## Session VII: Group IV nanosystems

- E-VI.1** 9:00 Invited POROUS SILICON: MATERIAL, TECHNOLOGY AND APPLICATION, **W. LANG**, HSG-IMIT, Villingen-Schwenningen, Germany
- E-VI.2** 9:40 STRUCTURAL AND SPECTROSCOPIC CHARACTERIZATION OF SILICON "BRUSH"-SUPERLATTICES, A.I. Klimovskaya, S.A. Kostyukevych, Inst. Semicond. Physics, 45 Prospect Nauki, 252028 Kyiv, Ukraine, I.P. Ostrovskii, University "Lvivska Politechnica", 12 Str. S.Banera, 290013 Lviv, Ukraine
- E-VI.3** 10:00 ALTERATION OF BAND STRUCTURE IN Si NANOCRYSTALS, B.J. Pawlak, T. Gregorkiewicz and C.A.J. Ammerlaan, Van der Waals-Zeeman Institute, University of Amsterdam, Valckenierstraat 65, NL-1018 XE Amsterdam, The Netherlands
- E-VI.4** 10:20 SAMPLE MANAGEMENT OF SILICON NANOWIRES TOWARDS AN INVESTIGATION OF ELECTRONIC PROPERTIES, J.Z. He, Z. Xie, M.F. Chiah, S. Lin, C.H. Ng, N. Ke, E.Z. Luo, J.B. Xu, and I.H. Wilson, Department of Electronic Engineering, the Chinese University of Hong Kong, Shatin, New Territories, Hong Kong, China, Y.H. Tang, N. Wang, and S.T. Lee, Department of Physics and Materials Science, City University of Hong Kong, Tat Chee Avenue, Kowloon, Hong Kong, China
- 10:40 **BREAK**
- E-VI.5** 11:10 Invited NANO-ELECTRONIC, SENSING AND OPTOELECTRONICS WITH NANOSCALE SILICON, **P.M. Fauchet**, Rochester University, Rochester, USA
- E-VI.6** 11:50 MEMORY EFFECTS IN MOS CAPACITORS WITH SILICON QUANTUM DOTS, I. Crupi, S. Lombardo, C. Spinella, C. Bongiorno, CNR-IMETEM, Catania, Italy; C. Gerardi, B. Fazio, M. Melanotte, STMicroelectronics, Catania, Italy
- E-VI.7** 12:10 LPCVD GROWTH OF SELF ASSEMBLED SILICON NANOCRYSTALS FOR QUANTUM DEVICES, T. Baron\*, N. Buffet\*\*, C. Busseret\*, B. De Salvo\*\*, A. Ermolieff\*\*, A. Souifi\*, E. Gautier\*, P. Mur\*\*, D. Mariolle\*\*, F. Martin\*\*, M.N. Séméria\*\*, \*LPM UMR 5511 CNRS, 20 Av. Albert Einstein, 69622 Villeurbanne Cedex, France, \*\*Leti-CEA Technologies Avancées, 17 Rue des Martyrs, 38054 Grenoble Cedex 9, France
- E-VI.8** 12:30 HYDROGEN-ENHANCED SELF-ORGANIZATION OF INTERSTITIAL-TYPE DEFECTS AGGREGATION IN SILICON, Yu.V. Gorelkinskii, Kh.A. Abdullin and B.N. Mukashev, Institute of Physics and Technology Kazakstan Ministry of Education and Science, 480082 Almaty, Kazakstan
- 12:50 **LUNCH**

**Thursday June 1, 2000**  
Jeudi 1er juin 2000

**Afternoon**  
Après-midi

**Session VII: Group IV nanosystems**

- E-VII.1** 14:30 Invited TRANSPORT PROPERTIES OF SINGLE AND MULTIWALL CARBON NANOTUBES, **C. Schönenberger**, Basel University, Basel, Switzerland
- E-VII.2** 15:10 INVESTIGATION OF THE INTER-TUBE COUPLING IN SINGLE WALL NANOTUBE ROPES, H. Stahl, J. Appenzeller, B. Lengeler, II. Physikalisches Institut, RWTH Aachen, Templergraben 55, 52062 Aachen, Germany, R. Martel, Ph. Avouris, IBM T.J. Watson Research Center, Yorktown Heights NY 10598, USA
- E-VII.3** 15:30 GROWTH OF CARBON NANOTUBES AND SEMICONDUCTOR NANOWIRES ON IRON-PATTERNED SILICON SUBSTRATES, Shoushan Fan, Jien Cao, Haiyan Dang, Qian Gu, Jianhong Zhao, Department of Physics, Tsinghua University, Beijing 100084, P.R. China
- 15:50 **BREAK**
- E-VII.4** 16:10 HIGH PERFORMANCE COMPONENTS THROUGH NANOELECTRONICS, G.S. Pomrenke, Air Force Office of Scientific Research, Arlington, USA
- E-VII.5** 16:30 ROOM TEMPERATURE BLUE LIGHT EMISSION FROM ECR-CVD DEPOSITED NANO-CRYSTALLINE SiC, G. Foti, University of Catania, Italy
- E-VII.6** 16:50 MICROSTRUCTURE EVOLUTION OF NANOMETER SIZE HEMISPHERICAL-GRAINED Si DEPOSITED BY RTCVD, S. Berger, Department of Materials Eng., Technion, Haifa 32000, Israel
- 17:10 – 19:00 **POSTER SESSION**

**Poster session IV:**

**Nanoporous structures, insulating and metallic nanocomposites**

- E-IV/P01** OPTICAL PROPERTIES OF CdS NANOPARTICLES GROWN IN Al-MCM-41 MATERIALS, M. Hernandez-Vélez(1), I. Diaz(2), R.J. Martin-Palma(1), H. Villavicencio-Garcia, (3), J. Pérez-Pariente(2), and J.M. Martínez-Duart(1) ; (1)Departamento de Física Aplicada, C-12, Universidad Autónoma de Madrid, 28049 Cantoblanco, Madrid. Spain ; (2)Instituto de Catalisis y Petroleoquímica (CSIC). 28049 Cantoblanco, Madrid, Spain ; (3) Instituto Superior Pedagógico "E.J. Varona", Facultad de Ciencias. Ciudad Libertad, Marianao, La Habana, Cuba
- E-IV/P02** SYNTHESIS AND LUMINESCENCE PROPERTIES OF COLLOIDAL YVO<sub>4</sub>:LN PHOSPHORS, A. Huignard, T. Gacoin, J.-P. Boilot; Groupe de Chimie du Solide, Laboratoire de Physique de la Matière Condensée, UMR CNRS 7643, Ecole Polytechnique, 91128 Palaiseau, France
- E-IV/P03** SURFACE REACTIVITY OF TIN OXIDE AND Pt-DOPED TIN OXIDE THIN FILMS PREPARED BY SOL-GEL METHOD, C. Canevali, N. Chiodini, C.M. Mari, F. Morazzoni, R. Ruffo, R. Scotti, Dipartimento di Scienza dei Materiali, Università di Milano Bicocca, Via Cozzi 53, 20125 Milano, Italia, L. Armelao, E. Tondello, CNR-CSSRCC, Via Marzolo 1, Padova, Italy
- E-IV/P04** NANOCOMPOSITES FROM NANO-Si IN Si<sub>Nx</sub>/NyCz MATRIX: QUANTUM SIZE EFFECTS, A. Gorchinsky, G. Zykov, S. Putselyk, A. Doroshenko, Yu. Astashkin, V. Pogorelov, E. Buzaneva, National Kiev Taras Shevchenko University, 64 Vladimirskaya str., 01033 Kyiv, Ukraine, V. Motsnyi, IMEC, MAP Division, Kapeldreef 75, 3001 Leuven, Belgium, V. Baru, A. Chernushich, M. Elinson, V. Jitov, V. Pokalyakin, G. Stepanov, L. Zaharov, Institute of Radio Engineering and Electronics of RAS, Mohovaja 11, Moscow, Russia
- E-IV/P05** MESOPOROUS SILICA FILMS AT THE OIL-WATER BOUNDARY, L. Faget(1), A. Berman(2) and O. Regev(1); (1)Department of Chemical Engineering and (2)Unit of Biotechnology, Ben-Gurion University of the Negev, 84105 Beer-Sheva, Israel

- E-IV/P06** CONTROLLABLE FABRICATION OF Bi<sub>2</sub>S<sub>3</sub> NANOWIRES VIA A NOVEL SOLVOTHERMAL DECOMPOSITION PROCESS, Shu-Hong Yu\*, Jian Yang, Zhao-Hui Han, Yi-Tai Qian\*, and Yu-Heng Zhang, Department of Chemistry and Structure Research Laboratory, University of Science and Technology of China, Hefei, Anhui 230026, People's Republic of China
- E-IV/P07** ELECTRON BEAM LITHOGRAPHY AND REACTIVE ION ETCHING OF NANOMETER SIZE FEATURES IN NIOBIUM FILMS, T.T. Piotrowski, A. Piotrowska, E. Kaminska, Z. Szopniewski, Institute of Electron Technology, Warsaw, Poland, S. Kolesnik, J. Wrobel, P. Gierlowski, S. Lewandowski, Institute of Physics PAS, Warsaw, Poland
- E-IV/P08** FORMATION AND GROWTH OF Zn<sub>1-x</sub>Mn<sub>x</sub>S NANOPARTICLES IN THE ORDERED MOLECULAR FILMS OF POLYAMIC ACID, Yu.N. Savin, T.G. Pak, M.V. Dobrotvorskaya, Institute for Single Crystals, 310001 Kharkov, Lenin ave., Ukraine
- E-IV/P09** SYNTHESIS AND CHARACTERIZATION OF Cu-Al<sub>2</sub>O<sub>3</sub> NANO-SCALE COMPOSITES PRODUCED BY IN-SITU REDUCTION, M.S. Motta, E.A. Brocchi, P.K. Jena and I.G. Solerzano, DCMM, PUC-Rio, Rio de Janeiro, Brazil
- E-IV/P10** STRUCTURAL ANALYSIS OF FILAMENTARY AND NANOSCALED IRON AND IRON OXIDE PARTICLES PREPARED BY LASER PYROLYSIS FROM THE GAS PHASE, H. Hofmeister, MPI f. Mikrostrukturphysik, Halle, Germany, F. Huisken, B. Kohn, MPI f. Stroemungsforschung, Goettingen, Germany, R. Alexandrescu, S. Cojocaru, A. Crunteanu, I. Morjan, I. Voicu, National Institute for Lasers, Plasma and Radiation Physics, Bucharest, Romania, L. Diamandescu, National Institute for Materials Physics, Bucharest, Romania
- E-IV/P11** STRUCTURAL, OPTICAL AND ELECTRICAL PROPERTIES OF NANOCRYSTALLINE TiO<sub>2</sub>In<sub>2</sub>O<sub>3</sub> COMPOSITES, S.K. Poznyak and D.V. Talapin, Institute of Physico-Chemical Problems, Belarusian State University, Leningradskaya St. 14, Minsk 220050, Belarus and A.I. Kulak, Institute of General and Inorganic Chemistry, Belarusian Academy of Sciences, Surganova St. 9, Minsk 220072, Belarus
- E-IV/P12** MAGNETIC PROPERTIES OF NICKEL NANOPARTICLES IN SILICA SOL-GEL MONOLITHS, O. Cintora-Gonzalez, C. Estournès, M. Richerd-Plouet and J.L. Guille, I.P.C.M.S. GMI, UMR 7504 CNRS, ULP, ECPM., 23, rue du Loess, B.P. 20/CR 67037 Strasbourg Cedex, France
- E-IV/P13** INFLUENCE OF TETRAALKYLAMMONIUM HYDROXIDE ON THE CHARACTERIZATION OF HYDROTHERMAL-DERIVED TiO<sub>2</sub> NANOPOWDERS, Juan Yang, José Maria F. Ferreira
- E-IV/P14** EPITAXIAL GROWTH OF MnO NANOPARTICLES ON Pt(111) BY REACTIVE DEPOSITION OF Mn<sub>2</sub>(CO)<sub>10</sub>, G.A. Rizzi, R. Zanoni, S. Di Siro, L. Perriello and G. Granozzi, Consorzio Interuniversitario per la Scienza e la Tecnologia dei Materiali (INSTM); Dipartimento di Chimica Inorganica Metallorganica ed Analitica, via Loredan 4, 35131 Padova, Italy; Dipartimento di Chimica, Università degli Studi di Roma La Sapienza, p.le A. Moro 5, 00185 Rome, Italy
- E-IV/P15** THE THERMAL STABILITY OF TUNGSTEN / SILICON MULTILAYERED NANOSTRUCTURES, S. Luby, E. Majkova, M. Jergel, Institute of Physics, Slovak Academy of Sciences, 84228 Bratislava, Slovakia; G. Leo, L. Vasanelli, Institute of Electronic Materials, CNR, 73100 Lecce, Italy; E. D'Anna, A. Luches, M. Martino, INFN and University of Lecce, Department of Physics, 73100 Lecce, Italy
- E-IV/P16** FORMATION OF NANO – CRYSTALLINE STRUCTURE AT COPPER-CARBON INTERFACES, A. Berner, D. Fuks<sup>1</sup>, D. E. Ellis<sup>2</sup>, K. Mundim<sup>3</sup>, S. Dorfman<sup>4</sup>, Dept. of Mater. Eng., Technion, 32000 Haifa, Israel; <sup>1</sup>Mater. Engin. Dept., Ben-Gurion University of the Negev, Beer Sheva, Israel; <sup>2</sup>Physics and Astronomy Dept., Northwestern Univ., Evanston IL 60208, USA; <sup>3</sup>Inst. de Fisica, Universidade Federal de Bahia, Salvador, Bahia, Brazil; <sup>4</sup>Dept. of Physics, Technion, 32000 Haifa, Israel

- E-IV/P17** DIELECTRIC PERMITTIVITY AND ELECTRICAL CONDUCTIVITY OF TUNGSTEN-SILICA NANO-COMPOSITES, T. Tepper and S. Berger, Department of Materials Eng., Technion, Haifa 32000, Israel
- E-IV/P18** DEPTH CONCENTRATION PROFILES OF POSITRONS IMPINGING ON MULTILAYER STRUCTURES, M. Dapor, A. Miotello, and D. Zari, INFN-Dipartimento di Fisica dell'Università di Trento and Istituto Trentino di Cultura, 38050 Povo, Trento, Italy
- E-IV/P19** GROWTH AND TOPOLOGY OF Co-Fe and Co-Ni ALLOY ELECTRODEPOSITS STUDIED BY ATOMIC FORCE MICROSCOPY, S. Vilain and J. Ebothe, UTAP-LMET, UPRESA EA 2061, Université de Reims, BP 138, 21 rue Clément Ader, 51685 Reims Cedex 02, France
- E-IV/P20** CHEMICAL DESIGNING OF THE NANOCRYSTAL-LINE OXIDES, E.P.Smirnov, CTMET Laboratory, State Institute of Technology, Moskovskii pr. 26, 198013 St. Petersburg, Russia
- E-IV/P21** STUDY OF NANOSIZED Cu- AND Co- FERROSPINEL POWDERS, I. Nedkov, T. Merodiiska, L. Milenova, Institute of Electronics, BAS, 72 Tzarigradsko Shaussee, 1784 Sofia, Bulgaria
- E-IV/P22** PROPERTIES OF NANOCRYSTALLINE SnO<sub>2</sub> OBTAINED BY MEANS OF A MICROWAVE PROCESS, A. Cirera, A. Cornet and J.R. Morante, EME, Dept. Electronics, University of Barcelona, Martí i Franquès 1, 08028 Barcelona, Spain
- E-IV/P23** DYNAMIC SYNTHESIS OF NANODIAMONDS AND THEIR CHARACTERIZATIONS, J.B. Donnet, E. Fousson, T.K. Wang, Laboratoire de Chimie Physique, ENSCMu, 3 rue Alfred Werner, 68093 Mulhouse Cedex, France and M. Samirant, C. Baras, ISL, 5 rue du Général Cassagnou, BP 34, 68301 Saint Louis Cedex, France and M. Pontier Johnson, Continental Carbon Company, 10655 Richmond Avenue, Suite #100, Houston TX 77042, USA
- E-IV/P24** COMPARISON OF THE STRUCTURAL AND MAGNETIC PROPERTIES OF THE ELECTRO-CHEMICALLY DEPOSITED Co-Fe LAYER AND ARRAYS OF NANOWIRES, H.R. Khan, and K. Petrikowski, FEM, Materials Physics Department, 73525 Schwaebisch Gmuend, Germany
- E-IV/P25** INFLUENCE OF THE GELATION PROCESS ON THE FORMATION OF -Fe<sub>2</sub>O<sub>3</sub> NANOPARTICLES DISPERSED ONTO SILICA AMORPHOUS MATRIX, C. Cannas, A. Musinu, G. Piccaluga, University of Cagliari, Department of Chemical Science, 09042 Cagliari, Italy
- E-IV/P26** STRUCTURAL PROPERTIES OF METAL OXIDE-SILICA NANOCOMPOSITES OBTAINED BY SOL-GEL, C. Cannas, M. Casu, A. Musinu, G. Piccaluga, S. Bruni, University of Cagliari, Department of Chemical Science, 09042 Cagliari, Italy.
- E-IV/P27** PRODUCTION AND IDENTIFICATION OF CLUSTERS AND NANOPARTICLES OF OXIDES AND CARBIDES, Anna Giardini, Tonia Mariarosaria Di Palma, Veronica Marotta, Stefano Orlando, Giovanni P. Parisi, CNR – Istituto per i Materiali Speciali, Via S. Loja, Zona Industriale, 85050 Tito Scalo (PZ), Italy
- E-IV/P28** SEMICONDUCTING DOPED BaTiO<sub>3</sub> FILMS GROWN BY INJECTION MOCVD, N. Lemée, C. Dubourdieu, J.P. Sénateur, F. Weiss, G. Delabouglise, LMGP-ENSPG-INPG. UMR CNRS 5628, BP46, 38402 Saint-Martin-d'Hères, France, Franck Laroudie, EDF – Division R&D, Site des renardières, 77818 Moret sur Loing Cedex, France
- E-IV/P29** PREPARATION VIA “SOLVATED METAL ATOMS” AND SURFACE REACTIVITY OF HOMO- AND HETERO-NANOSTRUCTURED METAL PARTICLES, E. Pitzalis, P. Salvadori, Dipartimento di Chimica e Chimica Industriale, Università di Pisa, Via Risorgimento 35, 56126 Pisa, Italy and G. Vitulli, Centro di Studio per le Macromolecole Stereordinate ed Otticamente Attive del CNR, Via Risorgimento 35, 56126 Pisa, Italy
- E-IV/P30** ZIRCONIUM TITANATE-BASED THIN FILMS BY POLIMERIC PRECURSOR ROUTES, Alessandra Bianco, Gualtiero Gusmano, Saulius Kaciulis\*, Lia Mattogno\*, Giuseppina Padeletti\*, and M. Viticoli, Università di Roma " Tor Vergata" Dipartimento di Scienze e Tecnologie Chimiche, Via della Ricerca Scientifica 00133 Roma, Italy, \*ICMAT-CNR Montelibretti, Monterotondo Stazione (Roma), Italy

- E-IV/P31** Au/TiO<sub>2</sub> NANOSTRUCTURATED CATALYST: EFFECTS OF THE SIZE OF THE GOLD PARTICLES ON CO OXIDATION AT 90 K, Flora Boccuzzi and Anna Chiorino, Dipartimento di Chimica I.F.M., via P. Giuria 7, 10125 Torino, Italy
- E-IV/P32** ELECTRODES BASED ON HYDROTALCITE-ORGANIC POLYMER COMPOSITES, E.Scavetta, D.Tonelli, Dipartimento di Chimica Fisica ed Inorganica, Università di Bologna, Italia

**Poster session V:**

**Organic and biological nanoscale systems, Nanopatterning and nanolithography**

- E-V/P01** ELECTRON BEAM INDUCED DEPOSITION OF NANOSTRUCTURES, F. Cicoira(1), B. Dwir(2), P. Hoffmann(1), E.Kapon(2), I Utke(2); Micro Engineering(1) and Physics(2) Department, Swiss Federal Institute of Technology Lausanne, 1015 Lausanne, Switzerland
- E-V/P02** CHARACTERISATION OF THERMOSETTING POLYMER MATERIALS FOR NANOIMPRINT LITHOGRAPHY, D. Lebedev, H Schulz, H.-C. Scheer, Mikrostrukturtechnik, Universitaet Wuppertal, Fuhlrottstr. 10, 42097 Wuppertal, Germany, K. Pfeiffer, Micro Resist Technology GmbH, Koepeniker Str. 325, 12555 Berlin, Germany
- E-V/P03** NANOPATTERNING OF SURFACES BY NEAR FIELD INDUCED PHOTOCHEMICAL EFFECT, C. Philipona, F. Marquis-Weible, Institut d'Optique Appliquée, Ecole Polytechnique Fédérale de Lausanne, Switzerland
- E-V/P04** STUDY OF ALBUMIN SELF-ASSEMBLING ON BIOCOMPATIBLE POLYMER SURFACES BY SCANNING FORCE MICROSCOPY, B. Pignataro and G. Marletta, Dipartimento di Scienze Chimiche, Università di Catania, Viale A. Doria 6-95125 Catania, Italy
- E-V/P05** SOFT NANO LITHOGRAPHY FOR POLYMERIC (OPTO)ELECTRONIC DEVICES, T. Nyberg, L.S. Roman, T. Granlund, and O. Inganaes, Laboratory of Applied Physics, Department of Physics and Measurement Technology, Linköping University, Sweden
- E-V/P06** CHARGE TRANSPORT IN MULTILAYERED CADMIUM STEARATE LANGMUIR-BLODGETT FILMS, Yu. N. Savin, S.I. Gordeev, A.V. Tolmachev, STC "Institute for Single Crystals", Dept. Institute for Single Crystals, Lenin Ave. 60, 310001 Kharkov, Ukraine
- E-V/P07** SELF-ORGANIZING DNA/FULLERENE MOLECULAR FILMS, O. Matyshevska, G. Karlash, Ya. Shtogun, N. Prokopchuk, A. Benilov, Yu. Kirgisov, A. Gorchinsky, T. Veblaya, N. Kharchenko, E. Buzaneva, Yu. Prilutskiy Biological, Radiophysical and Physical Departments Kiev National Taras Shevchenko University 64 Vladimirskaya str., 01033 Kiev, Ukraine, O. Marchenko Institute of Physics 45, Nauki Prosp. 01028 Kyiv, Ukraine

- E-V/P08** LAYER-BY-LAYER SELF-ASSEMBLED FILMS OF CdTe AND HgTe NANOCRYSTALS, A.L. Rogach, Institute of Physical Chemistry, University of Hamburg, 20146 Hamburg, Germany, M. Harrison, BT Adastral Park, Martlesham Heath, Ipswich, Suffolk, IP5 3RE, UK, D.S. Koktysh, N.A. Kotov, Department of Chemistry, Oklahoma State University, Stillwater OK 74078, USA
- E-V/P09** MODULATION OF Si (100) ELECTRONIC SURFACE DENSITY DUE TO SUPRAMOLECULAR INTERACTIONS OF GASEOUS MOLECULES WITH SELF-ASSEMBLED ORGANIC MONOLAYERS, M. Bollani, Cons. Milano Ricerche, v. Cicognara 7, 20129 Milano, Italy and Edifis UMR 6518, 13397 Marseille, France; R. Piagge, Siemens, Cascina Castelletto, 20019 Settimo M.se, Italy; and D. Narducci, Istituto Nazionale per la Fisica della Materia and Dept. Materials Science, v. Cozzi 53, 20125 Milano, Italy
- E-V/P10** SPONTANEOUS DESORPTION TIME-OF-FLIGHT MASS SPECTROMETRY: A TOOL FOR THE INVESTIGATION OF SURFACE CHEMISTRY, S. Krämer and S. Mittler, Max-Planck-Institute for Polymer Research, Ackermannweg 10, 55128 Mainz, Germany
- E-V/P11** FABRICATION OF GAS SEPARATING ASYMMETRIC CERAMIC MEMBRANES THROUGH COMBINATION OF LB DEPOSITION OF OLIGOMERIC OR POLYMERIC PRECURSORS AND PLASMA TREATMENT, K. Beltsios, E. Soterakou and N. Kanellopoulos, Institute of Physical Chemistry, NCSR Demokritos, 15310 Aghia Paraskevi, Greece and G. Tsangaris, Dept. of Chemical Engineering, NTUA, 15780 Athens, Greece
- E-V/P12** SELF-ASSEMBLY SUPRAMOLECULAR THIN FILMS: A NOVEL APPROACH TO SURFACE FUNCTIONALISATION CONTROLLED BY HYDROGEN BONDING, M. Cavallini, J.-I. Pascual, R. Lazzaroni, G. Gadret, G. Ruani, R. Zamboni, F. Biscarini, Consiglio Nazionale delle Ricerche, Istituto di Spettroscopia Molecolare, Via P. Gobetti 101, 40129 Bologna, Italy, D. Timpel, F. Zerbetto, Dip. Chimica, Università di Bologna, Via Selmi 2, 40100 Bologna, D.A. Leigh, CSMC, Dep. of Chemistry, University of Warwick, Coventry CV4 7AL, UK
- E-V/P13** POLYALKYLTHIOPHENES-BASED PHOTODETECTOR DEVICES: EFFECT OF SIDE-CHAIN LENGTH ON THE DEVICE PERFORMANCE, N. Camaioni, G. Casalbore-Miceli, Istituto CNR-FRAE, via Gobetti 101, I-40129 Bologna, Italy, M. Catellani, S. Luzzati, Istituto CNR-ICM, via Bassini 15, I-20133 Milano, Italy
- E-V/P14** MICROPATTERNED MATERIALS ABLE TO INFLUENCE THE CELL BEHAVIOUR, R. Barbucci, L. Lamponi, A. Magnani, D. Pasqui, CRISMA and Department of Chemical and Biosystem Sciences and Technologies, University of Siena, Via E. Bastianini 12, 53100 Siena, Italy
- E-V/P15** ELECTROCHEMICAL PROBING OF DNA BASED ON OLIGONUCLEOTIDE-FUNCTIONALIZED POLYPYRROLE, Hafsa Korri-Youssoufi, B. Makrouf, F. Garnier, Laboratoire des Matériaux Moléculaires, CNRS, 2 rue Henri Dunant 94320 Thiais, France
- E-V/P16** SYNTHESIS OF 3-DERIVATIZED PYRROLES PRECURSORS POLYMERS FOR FONCTIONALIZATION WITH BIOMOLECULES TOWARD BIOSENSORS DEVICES, Hafsa Korri-Youssoufi, F. Garnier and A. Yassar, Laboratoire des Matériaux Moléculaires, CNRS, 2 rue Henri Dunant 94320 Thiais, France
- E-V/P17** THIN FILM OF A BIS-SUBSTITUTED Cu-PHTHALOCYANINE AS CONDUCTIVE GAS SENSOR FOR SELECTIVE DETECTION OF NO<sub>2</sub>, G. Mele<sup>a</sup> R. Rella<sup>b</sup>, G. Rosso<sup>a</sup>, L. Valli<sup>a</sup>, G. Vasapollo<sup>a</sup>, (a) University of Lecce, Dipartimento di Ingegneria dell'Innovazione, via Arnesano, 73100 Lecce, Italy, (b) Istituto per lo Studio di Nuovi Materiali per l'Elettronica (IME) dal CNR, via Arnesano, 73100 Lecce, Italy
- E-V/P18** FUNCTIONALIZED BIODEGRADABLE NANOPARTICLES PRODUCED BY INVERSE MICROEMULSION POLYMERIZATION, L. Sartore, F. Bignotti, M. Penco, A. D'Amore, Dipartimento di Chimica e Fisica per l'Ingegneria e i Materiali, University of Brescia, Via Valotti 9, 25133 Brescia, Italy, F. Lebon, R. Jerome, Center for Education and Research on Macromolecules (CERM), University of Liège, Belgium

**Friday June 2, 2000**  
Vendredi 2 juin 2000

**Afternoon**  
Après-midi

**Session VIII: Self-assembling organic and biological systems**

- E-VIII.1** 9:00 Invited NANOSTRUCTURES FOR BIOELECTRONICS, **J.M. Cooper**, University of Glasgow, Glasgow, UK
- E-VIII.2** 9:40 A NANOMETER SCALE JUNCTION TO STUDY ELECTRICAL PROPERTIES OF MOLECULES, M.A. Rampi, R.E. Holmlin, R. Haag, A. Cohen, F. Scandola, G.M. Whitesides, Departement of Chemistry and Chemical Biology, Harvard University, Cambridge MA 02138, USA, Dipartimento di Chimica, Centro di Fotochimica CNR, Università di Ferrara, 44100 Ferrara, Italy
- E-VIII.3** 10:00 PREPARATION AND MANIPULATION OF FIBRES AND MOLECULES AS COMPONENTS FOR NANOSYSTEMS, R. Groeger and P. von Blanckenhagen, Forschungszentrum Karlsruhe, Institut fuer Nanotechnologie, Postfach 3640, 76021 Karlsruhe, Germany
- 10:20 **BREAK**
- E-VIII.4** 10:50 Invited LIGHT TWEEZERS AND NOVEL 3D AFM TECHNIQUES FOR APPLICATION IN BIOSYSTEMS, **H. Hoerber**, EBML, Heidelberg, Germany
- E-VIII.5** 11:30 A NEW METHOD FOR THE IMMOBILISATION OF ANTIBODY IN CONDUCTING POLYMERS, C. Richard, H. Korri-Youssoufi, A. Yassar, F. Garnier, LMM, CNRS, 2 rue Henry Dunant 94320 Thiais, France
- E-VIII.6** 11:50 SURFACE ORGANIZATION OF SINGLE HYPERBRANCHED POLYMER MOLECULES AS STUDIED BY ATOMIC FORCE MICROSCOPY, P. Viville<sup>1</sup>, A. Deffieux<sup>2</sup>, J. L. Brédas<sup>1</sup> and R. Lazzaroni<sup>1</sup>, <sup>1</sup> Service de Chimie des Matériaux Nouveaux, Centre de Recherche en Electronique et Photonique Moléculaires, Université de Mons-Hainaut, 20 Place du Parc, 7000 Mons, Belgium, <sup>2</sup> Laboratoire de Chimie des Polymères Organiques, UMR, 5629 CNRS-ENSCP, Université de Bordeaux, 1 Avenue Pey Berland, BP 108, 33405 Talence Cedex, France
- E-VIII.7** 12:10 ELECTRICAL PROPERTIES OF LANGMUIR-BLODGETT FILMS ENCLOSED BETWEEN MOLECULAR ELECTRODES, T.S. Berzina, V.I. Troitsky and M.P. Fontana, Department of Physics and INFN, University of Parma, Viale delle Scienze, 43100 Parma, Italy
- 12:30 **CONCLUDING REMARKS: H. Grimmeiss and G.Marletta**

**End of symposium G.**