

THUp.SUR: Surface, Interface and Low-Dimensional Physics II - Poster Session

Time: Thursday 16:30–18:40

Location: Physics Department

THUp.SUR.1 16:30 Physics Department

Regularities of submicron spherical powders and nanosized structures formation from electroconductive materials by electroerosion dispersion — MYKOLA MONASTYROV^{1,2}, •TETIANA PRIKHNA², PETRO TALANCHUK¹, and ROMAN SHEKERA^{1,2} — ¹Open International University of Human Development Ukraine, 1g Chorevaya Street, , Kiev, 04071, Ukraine, prikhna@mail.ru — ²Institute for Superhard Materials of the National Academy of Sciences of Ukraine, 2 Avtozavodskaya Street, Kiev, 04074, Ukraine, prikhna@iptelecom.net.ua

The regularities of submicron spherical powders and nanosized structures (Fe, Cu, Al, Sn, Ti, Ta, Co, Ni, CuO, aluminum oxide, tungsten carbides, carbides and nitrides) formation from electroconductive materials by electroerosion dispersion are discussed.

THUp.SUR.2 16:30 Physics Department

Effect of external stress on phononic and surface properties of auxetic crystal — •DOMINIK TRZUPEK^{1,2}, DARIUSZ TWARÓG¹, and PIOTR ZIELIŃSKI^{1,3} — ¹The H. Niewodniczański Institute of Nuclear Physics PAN, ul. Radzikowskiego 152, 31-342 Kraków, Poland — ²Jagiellonian University, Institute of Physics, ul. Reymonta 4, 30-059 Kraków, Poland — ³Cracow Technical University, Institute of Physics, ul. Podchorążych 1, 30-084 Kraków, Poland

Elastic constants are evaluated as functions of external stresses in model of auxetic. Absolute stop bands for bulk lattice waves and dispersion relations for surface waves are shown to be tunable by stress.

THUp.SUR.3 16:30 Physics Department

Irreducible finite-size effects in surface free energies from crystal-nucleation data. — •TATYANA ZYKOVA-TIMAN¹, CHANTAL VALERIANI², EDUARDO SANZ³, DAAN FRENKEL², and ERIO TOSATTI^{4,5} — ¹Dept. of Chemistry and Applied Biosciences, ETHZ, 6900 Lugano, Switzerland — ²F.O.M. Institute for Atomic and Molecular Physics, Kruislaan 407, 1098 SJ Amsterdam, The Netherlands — ³Dept. of Physics, Utrecht University, Princetonplein 5, 3584CC Utrecht, The Netherlands — ⁴The Abdus Salam I.C.T.P, 34014 Trieste, Italy — ⁵SISSA and INFN/Democritos, Via Beirut 2-4, 34014 Trieste, Italy

Our work highlight the fact that if nucleation studies are used to estimate solid-liquid surface free energies, the analysis cannot be based on classical nucleation theory but must make use of the microscopic theories.

THUp.SUR.4 16:30 Physics Department

Growth, Stability and Structure of Zn/Pd(111) — •WERNER STADLMAYR and NORBERT MEMMEL — Institute of Physical Chemistry, University of Innsbruck, A-6020 Innsbruck, Austria

Low-energy ion-scattering is applied to study Zn films on Pd(111), for which conflicting results were reported. At temperatures of 300-550 K our data indicate a slightly buckled 1:1 surface alloy, supporting a recent XPS study.

THUp.SUR.5 16:30 Physics Department

Spin Hall effect, spin currents and spintronics in ballistic low dimensional nanodevices — •PASQUALE ONORATO^{1,2} and STEFANO BELLUCCI¹ — ¹INFN, Laboratori Nazionali di Frascati, P.O. Box 13, 00044 Frascati, Italy — ²Dip. Ingegneria dell'Informazione, Seconda Università di Napoli, 81031 Aversa (CE), Italy.

We consider the Spin Effects due to the Spin Orbit interactions in ballistic devices patterned in two dimensional electron gases. We discuss the Spin Hall Effect and the role of these devices in the spintronics.

THUp.SUR.6 16:30 Physics Department

The adsorption of Pb on Si (100)-2x1 surface: Intermixing at interface. — •PAVEL SHUKRYNAU, MARTIN SVEC, MARTIN VONDRACEK, PINGO MUTOMBO, and VLADIMIR CHAB — Institute of Physics Academy of Sciences of the Czech Republic. Cukrovarnicka 10, CZ 162 53, Prague, Czech Republic.

We studied Pb adsorption on the Si (001)-2x1 surface deposited at RT using VT STM/STS. New chains with contrast different from Pb chains are found on the surface. They are parallel to the Pb rows.

THUp.SUR.7 16:30 Physics Department

Ordered surface-alloys formation in the Hf/W(100) adsorption system — •ANTONI CISZEWSKI, ARTUR TREMBULOWICZ, LESZEK JURCZYSZYN, and ZBIGNIEW SZCZUDLO — Institute of Experimental Physics, University of Wrocław, pl. Maksa Borna 9, 50-204 Wrocław, Poland

Surface alloying in Hf/W(100) system was studied using STM, LEED and AES. Two ordered c(2x4) and (r5xr5)R26.6 phases were observed. Ab-initio molecular dynamics calculations proved that they respectively correspond to Hf3W and Hf4W surface alloys.

THUp.SUR.8 16:30 Physics Department

Conductance of a tunnel point-contact of noble metals in the presence of a single defect — •YEVEGENIYA AVOTINA¹, YURIY KOLESNICHENKO¹, SANDER ROOBOL², and JAN VAN RUITENBEEK² — ¹B.I. Verkin Institute for Low Temperature Physics and Engineering, National Academy of Ukraine, Kharkov, Ukraine — ²Kamerlingh Onnes Laboratorium, Universiteit Leiden, Leiden, The Netherlands

We have demonstrated the possibility of calculations of anisotropic conductance oscillation caused by electron scattering by the defect. The analysis of interference patterns makes it possible to find the position of the defect below surface.

THUp.SUR.9 16:30 Physics Department

Field emission studies on carbon nanotubes in alumina templates — •FABRIZIO ODORICI⁵, RENATO ANGELUCCI^{1,5}, ILARIO BOSCOLO², SIMONE CIALDI², ALESSANDRO CIORBA³, MARCO CUFFIANI^{4,5}, LUCIANA MALFERRARI⁵, ALESSANDRO MONTANARI⁵, RITA RIZZOLI^{1,5}, MARCO ROSSI³, VITO SESSA⁶, MARIA LETIZIA

TERRANOVA⁶, and GIULIO PAOLO VERONESE^{1,5} — ¹CNR IMM sezione di Bologna, V. Gobetti 105, 40126 Bologna, Italy — ²INFN and Dipartimento di Fisica Università di Milano, via Celoria 16, 20133 Milano, Italy — ³Dipartimento di Energetica, Università di Roma La Sapienza, via A. Scarpa 16, 00161 Roma, Italy — ⁴Dipartimento di Fisica Università di Bologna, V.le B. Pichat 6/2, 40127 Bologna, Italy — ⁵INFN, V.le B. Pichat 6/2, 40127 Bologna, Italy — ⁶Dipartimento di Scienze e Tecnologie Chimiche, MINASlab, Università di Roma Tor Vergata and INFN, via della Ricerca Scientifica, 00133 Roma, Italy

Carbon nanotubes electronic and geometrical properties make them almost ideal nanomaterial for building field-emission based electron sources. Open questions about field emission are discussed by comparing simulations with measurements on carbon nanotubes in alumina templates.

THUp.SUR.10 16:30 Physics Department

Nonequilibrium Potential Approach: New Aspects — ●HORACIO S. WIO — Instituto de Fisica de Cantabria, Santander, SPAIN

SR in spatially extended systems, including nonlocal contributions with an “optimal” value giving a SR*s maximum response, are obtained; a NEP for KPZ, conjectures proved, and SR in a “bounded KPZ” discussed.

THUp.SUR.11 16:30 Physics Department

Potential energy surface of sliding interfaces: insight into the tribological properties of nanoscale materials, two cases studied. — GIOVANNA ZILIBOTTI^{1,2,3}, MARIA CLELIA RIGHI^{1,2,3}, MAURO FERRARIO^{1,2,3}, and ●CARLO MARIA BERTONI^{1,2,3} — ¹INFN-CNR national research center on nanoStructures and bioSistems at Surfaces (S3) — ²CNISM Consorzio Interuniversitario per le Scienze Fisiche della Materia — ³Dipartimento di Fisica, Università di Modena e Reggio Emilia, Via Cami 213/a, Modena, Italy

The frictional properties of surfaces in relative motion are governed by the potential energy surface. Two cases studied: i) rare gas monolayers on metal substrates, ii) diamond surfaces in presence (or in absence) of adsorbates.

THUp.SUR.12 16:30 Physics Department

Boundary between bcc and hcp Lattices in a 4 He Quantum Crystal (Local oscillations and dissipation) — ●VICTOR LYKAH¹ and EUGENE SYRKIN² — ¹National Technic University “Kharkiv Polytechnic Institute”, 21 Frunze Str., Kharkiv, 61002, Ukraine — ²Institute for Low Temperature Physics and Engineering of NAS, 47 Lenin Ave., Kharkiv, 61103, Ukraine

Microscopic transition between bcc and hcp phases is considered. The form and energy of the boundary are found. Spectrum of local oscillations on the boundary is found. The mechanism meets recent experiments in solid He.

THUp.SUR.13 16:30 Physics Department

Light-induced growth and demolition of alkali metal nanoparticles in porous silica — ●ALESSIA BURCHIANTI — CNISM and Physics Department, University of Siena, I-53100 Siena, Italy

Light-induced structural changes of alkali-metal nanoparticles grown in porous silica are analysed. Light, depending

on its frequency, induces either growth or demolition of alkali metal clusters with size and shape determined by the host-guest interaction.

THUp.SUR.14 16:30 Physics Department

Physical properties of nanostructured Si layers induced by high energy ions implantation — ●ANTONIO SERRA¹, DANIELA MANNO¹, EMANUELA FILIPPO¹, LUCIO CALCAGNILE², GIANLUCA QUARTA², LUCIO MARUCCIO², and MARCO ROSSI³ — ¹Dipartimento di Scienza dei Materiali - Università* del Salento I-73100 Lecce (Italy) — ²Dipartimento di Ingegneria dell’Innovazione - Università* del Salento CEDAD, I-73100 Lecce (Italy) — ³Dipartimento di Energetica * Università* di Roma *La Sapienza* I-00161 Roma (Italy)

In this work a tandem-type accelerator at 3 MV acceleration voltage, has been used to implant oxygen ions on Si(001). The detailed understanding of the physical properties has requested the application of complimentary techniques.

THUp.SUR.15 16:30 Physics Department

Van der Waals interactions by Wannier functions and the adsorption of Ar on graphite. — KARIMA BENYAHIA and ●PIER LUIGI SILVESTRELLI — Dipartimento di Fisica *Galilei*, *Università di Padova, via Marzolo 8, I-35131 Padova, Italy.

We apply the novel Maximally localized Wannier functions (Van der Waals interactions) to adsorption of Ar on graphite

THUp.SUR.16 16:30 Physics Department

Charge and Discharge Process on SiO₂ by SPM Techniques: Towards Data Storage Devices — ●ELISÂNGELA SILVA-PINTO and BERNARDO RUEGGER ALMEIDA NEVES — Departamento de Física, Universidade Federal de Minas Gerais, Av. Antônio Carlos, 6627, Cep. 30123-970 - Belo Horizonte, Minas Gerais, Brasil

Careful study of charging and discharging processes on SiO₂ is realized by SPM techniques. The influence of air relative humidity and surface hydrophobicity is analyzed and a complete route to develop memory devices is presented.

THUp.SUR.17 16:30 Physics Department

Electrical Conduction Mechanism in Titanium Oxide Thin Films — ●DIANA MARDARE and GHEORGHE I. RUSU — Alexandru Ioan Cuza Univeristy, Faculty of Physics, Iasi,Romania

In this study, a model have been proposed (Baccarani) to explain the mechanism of electrical conduction in TiO₂ sputtered thin films. Impurity concentration and the constant interface-state distribution have been calculated using Baccarani model.

THUp.SUR.18 16:30 Physics Department

Excitons in Wurtzite AlGa_N/Ga_N Quantum-Well Heterostructures: Role of Non-Adiabaticity — EVGHENII POKATILOV¹, DENIS NIKA¹, ●VLADIMIR FOMIN^{1,2,3}, and JOZEF DEVREESE^{2,3} — ¹PMS, State University of Moldova, Chisinau, Moldova — ²TFVS, Universiteit Antwerpen, Belgium — ³PSN, COBRA, TU Eindhoven, The Netherlands

Using six-band hole Hamiltonians, we analysed excitons in

wurtzite

AlGa_N/Ga_N quantum-well heterostructures. A non-adiabatic approach is needed in order to quantitatively interpret the observed positions and ratios of the intensities of the photoluminescence peaks.

THUp.SUR.19 16:30 Physics Department

High-field electronic transport in thin-film systems of the metal/organic polymer/metal type — ●GHEORGHE RUSU¹, ANTON AIRINEI², GEORGE RUSU¹, MIHAELA DICIU¹, PETRONELA RAMBU¹, and MIHAELA RUSU¹ — ¹”Al.I.Cuza” University, Faculty of Physics, 11 Carol I Blvd, R-700506, Iasi, Romania — ²P.Poni Institute of Macromolecular Chemistry, Grigore Ghica Voda, 41A, R-700487, Iasi, Romania

For some new chelate modified polysulfones, the thin-film heterostructures of the metal/polymers/metal type are studied.

Some interesting non-ohmic effects have been obtained for high electric fields ($>10^5$ V/cm).

THUp.SUR.20 16:30 Physics Department

Electronic properties of Si(111)/alkyl monolayer interfaces — ●DAMIEN AUREAU — Laboratoire de Physique de la Matière Condensée, Ecole Polytechnique, Route de Saclay 91120 Palaiseau, France — Hahn-Meitner-Institut Abteilung Silizium-Photovoltaik, (SE1) Kekuléstrasse 5D-12489 Berlin

Si-alkyl surfaces were investigated using infrared spectroscopy, in-situ photoluminescence and photovoltage measurements. They exhibit the same electronic quality as Si-H surfaces with a higher stability, even in contact with buffer solutions up to pH 9.

THUp.SUR.21 16:30 Physics Department

Size and shape tuning of silver nanostructures by a rapid microwave assisted green method — EMANUELA FILIPPO, DANIELA MANNO, and ●ANTONIO SERRA — Dipartimento di scienza dei Materiali - Università del Salento-73100 Lecce (Italy)

Silver nanostructures have been prepared by a rapid green approach under microwave irradiation from a solution of silver nitrate and sucrose. Silver colloids with different morphologies were successfully obtained at different microwave irradiation time.

THUp.SUR.22 16:30 Physics Department

Shifts and splitting of surface plasmon in copper nanoparticles under femtosecond laser irradiation — ●IGOR DMITRUK^{1,2}, IVAN BLONSKYY¹, IHOR PAVLOV¹, OLEG YESHCHENKO², ALEXANDR ALEXEENKO³, ANDRIJ DMYTRUK^{1,4}, PETRO KORENYUK¹, and VIKTOR KADAN¹ — ¹Femtosecond Laser Complex, Institute of Physics, National Academy of Sciences of Ukraine, Kyiv, Ukraine — ²Physics Faculty, Kyiv National Taras Shevchenko University, Kyiv, Ukraine — ³GomelState Technical University, Gomel, Belarus — ⁴Center for Interdisciplinary Research, Tohoku University, Sendai, Japan

Red shift and splitting of surface plasmon in copper nanoparticles observed under irradiation by femtosecond laser pulse are interpreted as a result of change of dielec-

tric constant of silica matrix due to optical Kerr effect.

THUp.SUR.23 16:30 Physics Department

Ab initio transport properties of Silicon/organic/Silicon interfaces — ●ANDREA FERRETTI^{1,2}, BENEDETTA BONFERRONI^{1,2}, ARRIGO CALZOLARI², ALICE RUINI^{1,2}, MARILIA J. CALDAS³, and ELISA MOLINARI^{1,2} — ¹Dipartimento di Fisica, Università di Modena e Reggio E., via Campi 213/A, IT-41100 Modena, Italy — ²INFM-CNR-S3, Natl. Center on nanoStructures and bioSystems at Surfaces, via Campi 213/A, IT-41100 Modena, Italy — ³Instituto de Física, Universidade de São Paulo, Cidade Universitária, SP-05508-900 São Paulo, Brazil

We investigate from first-principles the electronic and transport properties of hybrid organic-silicon interfaces made with conjugated molecules. The effects on transport of molecule-substrate bonding are explicitly analysed. Oxygen-bonded interfaces are identified as promising systems.

THUp.SUR.24 16:30 Physics Department

Antiferromagnetic Ordering in Adsorbed C60 on the Si(100) Surface: Density-Functional Theory Calculations — ●JI YOUNG LEE^{1,2}, MYUNG HO KANG¹, and JUN-HYUNG CHO² — ¹Department of Physics, Pohang University of Science and Technology, Pohang 790-784, Korea — ²BK21 Program Division of Advanced Research and Education in Physics, Hanyang University, 17 Haengdang-Dong, Seongdong-Ku, Seoul 133-791, Korea

We study the atomic and magnetic properties of the C60/Si(100)-c(4x4) surface using spin-polarized density-functional calculations. We predict the presence of antiferromagnetic coupling between unpaired dangling bonds within the conventional structural model.

THUp.SUR.25 16:30 Physics Department

Calculation of Contact Supercooling for InAs-Substrate Contacting with Sb-Solution in Ga-Melt — ●YEVGEN BAGANOV and STANISLAV SHUTOV — Kherson National Technical University, Kherson, Ukraine

At present work the contact supercooling for the system InAs substrate - solution Sb in the Ga melt, in the range of the contact temperatures 400-650 °C and (100) and (111) substrate orientation is calculated.

THUp.SUR.26 16:30 Physics Department

Influence of annealing on the surface morphology and optical transmission of antimony trioxide thin films — ●NICOLAE TIGAU — Department of Physics, Dunarea de Jos University of Galati, 111 Domneasca, 800201 Galati, Romania

The paper presents the influence of annealing on the surface morphology and optical transmission of antimony trioxide film deposited onto glass substrates. A correlation was established between the optical transmission and surface roughness of film.

THUp.SUR.27 16:30 Physics Department

Self-organization of charge-transfer C60-Zn(II) tetraphenylporphyrin complexes on condensation from quasiequilibrium vapour phase —

•IRINA ZAKHAROVA¹, EKATERINA DONENKO¹, GALINA ERMOLAEVA², VALERII SHILOV², TATIANA MAKAROVA³, OLEG KVVATKOVSKI⁴, and LUDVIG BELYAKOV⁴ — ¹State Polytechnic University, St. Petersburg, 195251, Russia — ²RC "Vavilov State Optical Institute" St. Petersburg, 199034, Russia — ³Ioffe PTI RAS, St. Petersburg, 194021, Russia — ⁴Umeå University, 90187 Umeå, Sweden

The method of vacuum evaporation in a hot-wall quasi-closed volume allows the growth of epitaxial layers close to thermodynamic equilibrium conditions, which triggers the self-organization process under the formation of C60-Zn(II)tetraphenylporphyrin (ZnTPP) complexes.

THUp.SUR.28 16:30 Physics Department

On the Electronic Transport Mechanism in Polycrystalline CdO Thin Films — •GHEORGHE RUSU, RADU RUSU, PETRONELA RAMBU, CRISTIAN DANTUS, and GEORGE RUSU — "Al.I.Cuza" University, Department of Physics, 11 Carol I Blvd, 700506, Iasi, Romania

CdO thin films, deposited by vacuum evaporation, are polycrystalline and have a cubic structure. The mechanism of electrical conduction is explained in term of Seto's model for polycrystalline semiconducting films.

THUp.SUR.29 16:30 Physics Department

Cross-sectional STM of the GaN (-2110) plane — DAVID KRÜGER, THOMAS SCHMIDT, JAN INGO FLEGE, TIMO ASCHENBRENNER, STEPHAN FIGGE, DETLEF HOMMEL, and •JENS FALTA — University of Bremen, Bremen, Germany

The (-2110) plane of a cleaved single GaN crystal has been investigated using cross-sectional scanning tunneling microscopy. The finding of a 1x1 unit cell points towards a stable bulk termination at room temperature.

THUp.SUR.30 16:30 Physics Department

Localization and Magnetic Properties of the Ground State of the Mn²⁺ Centers in ZnS Nanoparticles — SERGIU V. NISTOR¹, •MARIANA STEFAN¹, LEONA C. NISTOR¹, CARMENCITA D. MATEESCU¹, RUXANDRA BIRJEGA², and ETIENNE GOOVAERTS³ — ¹National Institute of Materials Physics, Bucharest-Magurele, Romania — ²National Institute of Laser, Plasma and Radiation Physics, Bucharest-Magurele, Romania — ³University of Antwerp - CDE, Wilrijk, Belgium

The localization and spin Hamiltonian parameters of three Mn²⁺ centers in nanostructured ZnS with mesoporous structure were for the first time unambiguously determined from the quantitative analysis of multifrequency Electron Paramagnetic Resonance spectra.

THUp.SUR.31 16:30 Physics Department

Surface Analysis of III-Nitride-Based Lateral Polarity Heterostructures — PIERRE LORENZ¹, SINDY HAUGUTH FRANK¹, JUERGEN A. SCHAEFER¹, VADIM LEBEDEV², OLIVER AMBACHER², and •STEFAN KIRSCHOK¹ — ¹Institut für Physik and Institut für Mikro- und Nanotechnologien, Technische Universität Ilmenau P.O. Box 100565 D-98684 Ilmenau, Germany — ²Fraunhofer Institute for Applied Solid State Physics, Tullastr. 72, 79108 Freiburg, Germany

We investigated ex-situ and in-situ grown N-face and Ga-face GaN and GaN-based LPHs (periodicity 2-5 μm) grown on sapphire substrates by molecular beam epitaxy (MBE). The GaN samples were studied by surface sensitive techniques.

THUp.SUR.32 16:30 Physics Department

Comparative Study on the Structural and Electrical Properties of Undoped and Zn-doped CdO Thin Films — •PETRONELA RAMBU, CRISTIAN DANTUS, and GEORGE RUSU — Al.I. Cuza University, Faculty of Physics, Carol I Blvd., No. 11, 700506-Iasi, Romania

Non-doped and Zn-doped CdO thin films have been obtained by thermal oxidation of vacuum evaporated metallic Cd and (Cd, Zn) thin films. The structural characteristics and electrical conductivity of as obtained samples were investigated.

THUp.SUR.33 16:30 Physics Department

Optical properties of periodic ensembles of metal nanowires for sensing — •MARIYA SOSNOVA, NICHOLAS DMITRUK, ALEXANDR KOROVIN, and OLGA MAYEVA — Institute of Semiconductor Physics, National Academy Science of Ukraine, 41 prospect Nauki Kyiv, Ukraine

Both the influence of ensemble characteristic on excitation of the local plasmon in nanowire and surface electromagnetic waves in 1D periodic system of metal nanowires and peculiarity of the interaction between such modes were considered

THUp.SUR.34 16:30 Physics Department

Magnetoresistance and Fabry-Perot interference in graphene spin valve devices — •MASASHI ONO¹, SATORU MASUBUCHI¹, KOHEI HAMAYA^{1,2}, MINORU KAWAMURA¹, and TOMOKI MACHIDA^{1,2} — ¹Institute of Industrial Science, University of Tokyo, 4-6-1 Komaba, Meguro-ku, Tokyo 153-8505, Japan — ²Institute for Nano Quantum Information Electronics, University of Tokyo, 4-6-1 Komaba, Meguro-ku, Tokyo 153-8505, Japan

We study oscillatory changes in magnetoresistance effect and Fabry-Perot interference in a graphene single layer attached to ferromagnetic electrodes for various gate-bias voltages. The relation between these two phenomena will be discussed.

THUp.SUR.35 16:30 Physics Department

Optical properties of inorganic/organic semiconductor hetero-structures: quaterthiophene intercalated in cadmium chalcogenophosphate — •SILVIA TAVAZZI¹, PETER JONATHAN SAMUEL FOOT², MASSIMILIANO LABATE¹, LUCIANO MIOZZO¹, HUGH O.MALLEY², ANTONIO PAPAGNI¹, LEONARDO SILVESTRI¹, and PETER SPEARMAN^{1,2} — ¹Università degli Studi di Milano Bicocca, Via Cozzi 53, I-20125 Milano (Italy) — ²School of Chemical and Pharmaceutical Sciences, Kingston University, Kingston upon Thames KT1 2EE (United Kingdom)

We report and compare the UV-vis optical functions and emission properties of cadmium chalcogenophosphate (CdPS3) crystals and hetero-structures of CdPS3 intercalated with quaterthiophene molecules, thus showing the synergistic effect of the organic and inorganic components

THUp.SUR.36 16:30 Physics Department

Ab initio simulation of C clustering on Ni (111) surface: the bonding between Ni and C. — ●GALINA KALIBAEVA¹, RODOLPHE VUILLEUMIER², ALI ALAVI³, SIMONE MELONI⁴, and GIOVANNI CICCOTTI¹ — ¹Università di Roma "La Sapienza", Roma, Italy — ²Université Pierre et Marie Curie, Paris, France — ³University of Cambridge, Cambridge, UK — ⁴CASPUR, Roma, Italy

We analyse the electronic structure and state occupations of adsorbed carbon on Ni(111) surface at different coverages using carbon effective molecular orbitals obtained from re-diagonalization of maximally localized Wannier orbitals assigned to carbon atoms.

THUp.SUR.37 16:30 Physics Department

Gas sensitivity mechanism of MIS-structures based on nanoporous silicon/catalytic Me composites — ●DMITRO DANILYUK¹, TETYANA GORBANYUK², and VOLODYMYR LITOVCHENKO² — ¹Kiev Taras Shevchenko national university, Radiophysical faculty, prospect Glushkova 5, 03127, Kiev, Ukraine — ²V. Lashkaryov Institute of Semiconductor Physics of NAS Ukraine, prospect Nauki, 41, 03028 Kiev, Ukraine

During our investigation, it was found that the MIS-structures based on nanoporous silicon films with embedded different transition Me microparticles possess enhanced sensitivity to some gas molecules. Mechanism of these phenomena has been studied.

THUp.SUR.38 16:30 Physics Department

Peculiarities of light propagation through thin corrugated metal films in surface plasmon polariton regime — ●ALEXANDER KOROVIN and MARIYA SOSNOVA — V.E. Lashkarev Institute of Semiconductor Physics, NAS of Ukraine, 41 prospect Nauki, Kiev, 03028, Ukraine

The essential spectral line shape transformation of split SPPs at p-polarized light propagation through thin corrugated films surrounding by closed dielectric media with presence of the shift between both film profiles has been obtained theoretically

THUp.SUR.39 16:30 Physics Department

Surface charge modes on GaAs nanowires probed by Raman spectroscopy — ●E. SPEISER¹, W. RICHTER¹, P. PRETE², P. PAIANO³, and N. LOVERGINE³ — ¹Dipartimento di Fisica, CNISM, Università di Roma Tor Vergata, 00133 Roma, Italy — ²IMM-CNR, Unità di Lecce, Via Arnesano, 73100 Lecce, Italy — ³CNISM, and Dipartimento di Ingegneria dell'Innovazione, Università del Salento

We have performed Raman measurements on single GaAs nanowires which show several surface modes. This assignment is made via the polarization rules, frequency analysis and calculations from the dielectric continuum model.

THUp.SUR.40 16:30 Physics Department

Local screening of a carbon nanotube by a STM tip — ●MARINE GUIGOU, ADELINÉ CREPIEUX, and THIERRY MARTIN — Centre de Physique Théorique, Marseille, France

We address the question of local screening of a carbon nanotube by a STM tip. Considering their effects, we analyse

to what extent they affect the transport in the nanotube.

THUp.SUR.41 16:30 Physics Department

The anisotropic growth of a vicinal surface under the meandering instability — ●ALBERTO VERGA — Aix-Marseille Université, Im2nP, Marseille, France

The step flow dynamics of a vicinal surface is intrinsically anisotropic. We derive an evolution equation and investigate the scaling properties of the surface roughness and demonstrate that length scales and height amplitude satisfy scaling laws.

THUp.SUR.42 16:30 Physics Department

Charge spectroscopy of quantum confinement levels and transport in SiGe quantum well — ●MIRON KAGAN¹, IRINA ANTONOVA², SVETLANA SMAGULOVA³, EFIM NEUSTROEV³, PAVEL ALEKSSEV⁴, and JAMES KOLODZEY⁵ — ¹Institute of Radio Engineering and Electronics, Russian Ac. Sci., Moscow, Mokhovaya 11, Russia — ²Institute of Semiconductor Physics, Russian Ac. Sci., Novosibirsk, Lavrentieva 13, Russia — ³Yakutsk State University, Yakutsk, Saha Republik, Belinskogo 32, Russia — ⁴A.F. Ioffe Phisiko-Technical Institute, Russian Ac. Sci., St. Petersburg — ⁵University of Delaware, Newark, DE 19716, USA

Recharging of quantum confinement levels in single-quantum-well Si/SiGe/Si structures was studied by charge spectroscopy. A peak demonstrated several activation energies in different temperature intervals was found. The activation energies origin is discussed.

THUp.SUR.43 16:30 Physics Department

Electron energy loss spectra of clean and oxidized Si surfaces — ●LUCIA CARAMELLA^{1,2}, CONOR HOGAN^{1,3}, and GIOVANNI ONIDA^{1,2} — ¹European Theoretical Spectroscopy Facility (E.T.S.F.) — ²Physics Department of Università degli Studi di Milano, via Celoria, 16, I-20133 Milano, Italy — ³Physics Department and CNR-INFN, Università di Roma Tor Vergata, via della Ricerca Scientifica, I-00133 Roma, Italy

We present recent progresses in the calculations of the EEL spectra of surfaces within the framework of the three layer model. The main system we investigate is the Si(100) surface, both clean and oxidized.

THUp.SUR.44 16:30 Physics Department

Electroni state dispersion and electron-phonon interaction of — ●PIERLUIGI GARGIANI¹, MARIO ITALO TRIONI², SIMONA ACHILLI², FABIO BUSSOLOTTI¹, and MARIA GRAZIA BETTI¹ — ¹Dipartimento di Fisica Università Roma La Sapienza Piazzale Aldo Moro 2 I-00185 Roma, Italy — ²CNISM Università Milano Bicocca CNISM UdR Milano Bicocca, I-20125 Milan, Italy

A combined experimental and theoretical study of the electronic properties of the Bi 2D structural phases investigated by angle resolved photoemission experiments and ab initio calculation is presented. The electron-phonon interaction will be discussed.

THUp.SUR.45 16:30 Physics Department

Atomic Oxygen Concentration in Plasma for Film Growth Activation in — ●THEODORE CHRISTIDIS, DI-

ALA HAIDAR-AHMAD, MAYA ABI AKL, and MALEK TABBAL — Physics Department, American University of Beirut, Beirut, Lebanon

Actinometry has been performed in oxygen-helium plasma as a function of plasma power, gas pressure and helium-to-oxygen ratio. Oxygen dissociation increases with plasma power and helium fraction but decreases with gas pressure.

THUp.SUR.46 16:30 Physics Department

Three-terminal negative resistance induced by electron-electron scattering: Bernoulli effect in an electron gas — •ISMET KAYA — Sabanci University, Faculty of Engineering and Natural Sciences, 34956 Istanbul, Turkey

The experimental results for three terminal devices fabricated in a 2DEG with submicron transit lengths is presented. The negative resistance effect is strongly enhanced with the reduced dimensions consistent with the the directional scattering picture.

THUp.SUR.47 16:30 Physics Department

Noble metal nanoparticles fabrication and fragmentation by femtosecond laser ablation: size compar-

ison by extinction spectroscopy and electron microscopy — •GUSTAVO TORCHIA^{1,2}, DANIEL SCHINCA^{1,3}, LUCIA SCAFFARDI^{1,3}, PABLO MORENO², and LUIS ROSO² — ¹Centro de Investigaciones Opticas, CIC-Conicet, cc 124 La Plata (1900), La Plata, Argentina — ²Grupo de Optica, Universidad de Salamanca, Plaza de la Merced s/n, Salamanca, Spain — ³Area Departamental de Ciencias Basicas, Facultad de Ingenieria, Univesridad Nacional de La Plata, la Plata, Argentina

Gold and silver nanoparticles were fabricated from femtosecond laser ablation immersed in liquid media. We compare the extinction spectroscopy against TEM and discuss different mechanisms involved in the decrease of particle size due to fragmentation.

THUp.SUR.48 16:30 Physics Department

Atmospheric ionization in urban centres and suburbs areas — •FLORIAN MANDIJA — University of Shkoder, Department of Physics, Shkoder, Albania

This study concerns on the small air ion concentration. This is correlated with the meteorological parameters, the concentration of aerosols, the radiation level, the presence of electric fields, solar radiation, cosmic rays, etc.