Conference Program

ACSIN 2016
13th International Conference on Atomically Controlled Surfaces, Interfaces and Nanostructures

October 9-15, 2016, Frascati, Rome, Italy

Conference chair
Antonio Bianconi – RICMASS, Superstripes, Rome, Italy

Co-chairs
Augusto Marcelli – INFN, Laboratori Nazionali di Frascati, Italy
Patrick Soukiassian – CEA, Université de Paris-Sud, France
OPENING 9:20

Chairperson: A Bianconi, A. Marcelli

09:40 F. Rosei: Multifunctional materials for electronics and photonics

10:00 G. Le Lay: Silicene the Artificial Graphenelike Silicon


10:40 F. Pulizzi: Publishing nanoscience and nanotechnology at the cutting edge

Coffee break 11:00

Chairperson: F. Rosei, G. Le Lay

11:30 T. Ogino: Characterization of exosomes using atomic force microscopy and scanning electron microscopy

11:50 P. De Padova: Multilayer Silicene

12:10 F. Flores: Reversible phase transitions on semiconductor surfaces: soft modes and dynamical fluctuations

12:30 S. Chiang: Collective Multi-Atom Diffusion of Ag/Ge(110) and Motion of Liquid Alloy Droplets of Au/Ge(110)

12:50 V. Aristov: Nanostructured graphene on cubic-SiC: synthesis, structure and transport properties

13:10 A. Tejeda: Gap opening on graphene sidewall nanoribbons

Lunch 13:30
Bingbing Liu: Revisiting the structural transitions and metallization of monoclinic vanadium dioxide under high pressure

M. Smerieri: Spontaneous oxidation of Ni clusters grown on highly ordered MgO/Ag(100) monolayers

Y. Chen: Highly flexible and transferable SWNTs/VO$_2$/Mica hierarchical films for high-performance thermochromic devices

R. Sugimoto: Effect of Oxygen doping on Chemical Bonding and Mechanical Properties of CVD-grown DLC Films

Coffee break 15:50

G. Gigli: Hybrid materials for Optoelectronic

T. Watanabe: Atomistic Origin of Dipole Layers at High-$k$/SiO$_2$ Interfaces

M. Chen: Ultrathin films for model catalysis studies

Qiushi Huang: Characterization and engineering of the interface and surface of nanoscale multilayers for EUV and X-ray Optics
Mo3S session

14:30 K.N. Eltsov: Target-size single-crystalline quasi free-standing graphene on Ni(111)


15:10 A. Podsiadły-Paszkowska: Atomic and electronic structure of corrugated silicene

15:30 G. Sugurbekova: Investigation of the influence of deposition temperature and substrate type on physical and morphological characteristics of GaN thin films synthesized in APCVD

Coffee break 15:50

Mo4S session

Chairperson: A. Kimura, M. Smerieri

16:20 A. Calzolari: Coupled surface-plasmon/thermoelectric power generators based on TCO nanowires

16:40 A. Sakai: Improved high-bias stability of single-atom contacts formed by junction closing

17:00 M. Zamoryanskaya: Transport properties of nanoheterostructures, influence of interfaces on cathodoluminescence properties

17:20 L. Scalvi: Blue emission of Ce$^{3+}$ in nanocrystalline heterojunction GaAs/SnO$_2$ and 2DEG photoinduced properties
Tu1T session

Chairperson: A. Irizawa, N. Müller

09:20 W. M. Kwiatek: NanoIR application in biology - chromosome (DNA) studies

09:40 A. Kimura: Non-equilibrium Surface Dirac Fermion Dynamics of Topological Insulators

10:00 S. Lupi: Terahertz optical properties of Topological Insulators

10:20 M. Rocca: Acoustic surface plasmons at gold surfaces: anomalous slope and effect of steps

10:40 C. Kryschi: Gold-Nanorod Based SPASER

Coffee break 11:00

Tu2T session

Chairperson: S. Lupi, W. M. Kwiatek

11:30 A. Perali: Superconducting nanostructures to realize optimal configurations for room temperature superconductivity: Lifshitz transitions, shape resonances and BCS-BEC crossover

11:50 A. Bianconi: Heterostructures at atomic limit for quantum coherence

12:10 K. Hermansson: Simulation of surfaces of simple and reactive oxides - dynamics and interactions

12:30 K. J. Franke: From single magnetic impurities on superconductors to coupled spin chains

12:50 A. F. Santander Syro: Novel two-dimensional electron gases at the surface of transition-metal oxides

13:10 N. Müller: Intermetallic charge transfer mechanism of solid solution alloy nanoparticle

Lunch 13:30
Tu3T session

Chairperson: K. Hermansson, A. F. Santander Syro

14:30 M. Krawiec: Silicene on metallic quantum wells

14:45 E. Ortega: Interplay between steps and vacancies on curved TiO₂(110)

15:00 T. Aruga: A precision surface electrical conductivity study of the Si(111)-In (4x1) – (8x2) phase transition

15:15 D.-J. Choi: Spin scattering studied with scanning tunneling microscopy

15:30 I. Miccoli: Quasi-1D atomic-chains on vicinal surfaces: the role of defects and constrictions towards electronic transport

15:45 J. Wollschläger: Strain induced quasi-one dimensional structure of rare earth silicides on Si substrates

Coffee break 16:00

Tu4T session

Chairperson: T. Ito, I. Miccoli

16:30 Y. Shigeta: Application of Kikuchi pattern to precise surface structure of GaN(0001) substrates at different polishing stages

16:45 S. Yamazaki: Interaction between adjacent twin Si₄ atom switches

17:00 H. Yasuda: In situ observations of crystallization process in amorphous antimony nanoparticles by μs time- and pm spatial-scale using the ultra-high voltage electron microscope

17:15 T. Ujihara: Evaluation of conduction mini-bands in semiconductor superlattice by visible-light photoelectron spectroscopy

17:30 I. Mochizuki: Determination of structure of the rutile-TiO₂ (110)-(1×2) surface by using total-reflection high-energy positron diffraction (TRHEPD)
Chairperson: **M. Rocca, V. Aristov**

**14:30** R. Berndt: *Spin manipulation by creating Single-Molecule Radical cations*

**14:45** L. Guillemot: *Thermodynamic balance of perylene self-assembly on Ag(110)*

**15:00** P. Borghetti: *Identification of surface structures of titania nanoparticles by photoemission spectroscopy*

**15:15** T. Ito: *Theoretical investigations for strain relaxation and resultant growth mode of InAs thin layer on GaAs(111)A*

**15:30** M. Jalochowski: *Ultrathin Sb layers on Pb quantum wells*

**15:45** O. De La Fuente: *Formation of a magnetite/hematite epitaxial bilayer generated with ion bombardment*

**Coffee break 16:00**

Chairperson: **P. Borghetti, C. Kryschi**

**16:30** H. Kim: *Gd-induced Defects in the (111) Surface of the Topological Insulator, Bi₂Te₃*

**16:45** J. Kolodziej: *The effect of a skin-deep surface zone on formation of two-dimensional electron gas at a semiconductor surface*

**17:00** M. Kopciuszyński: *Bismuth reconstructions on Si(553) surface*

**17:15** J. Shah: *LEED, STM and ARPES studies of a 2D As/Ag(111) surface alloy*

**17:30** P. Pervan: *Graphene on iridium vicinal surface; a route to electronic band engineering*
Chairperson: **M. Cestelli Guidi, K. J. Franke**

**09:20** A. Fontcuberta i Morral: *Advanced heterostructures in III-V nanowires*

**09:40** A. Morgante: *Ultrafast Charge Injection at Complex Interfaces: Organic-Organic, Organic-Inorganic and Organic-Graphene*

**10:00** F. Boscherini: *High resolution X-ray spectroscopy of electronic and atomic structure of TiO$_2$ nanostructures*

**10:20** A. Ya. Vul: *Nanodiamond particles, hydrosol and gel*

**10:40** M. Avdeed: *Structural peculiarities of detonation nanodiamonds by small-angle neutron scattering*

**Coffee break 11:00**

Chairperson: **A. Morgante, A. Fontcuberta i Morral**

**11:30** A. Acun: *Germanene, a germanium analogue of graphene*

**11:50** L. Hornekær: *Band gap engineering in hydrogen functionalized graphene*

**12:10** K. Wu: *Structure and electronic properties of 2D boron sheets*

**12:30** F. Banhart: *Electrical transport measured in chains of carbon atoms*

**12:50** K. Zekentes: *C nanowire Field-Effect-Transistors etc.*

**13:10** U. Starke: *Extreme doping levels and many-body interaction in epitaxial graphene on SiC(0001)*

**Lunch 13:30**
Z. Hiroi: Metal-insulator transition in a spinodally decomposed microstructure in the TiO$_2$–VO$_2$ system

Z. Wang: Creating and manipulating low-dimensional electron liquids at the surfaces of transition metal oxide

C. González: Detecting Inorganic Molecules on reactive MoS$_2$ defects by ab-initio Scanning Probe Microscopy Simulations

W. Xu: Local structural tuning of thermoelectric transport properties in oxides

K. Hatada: BEEM and STM theories by the multiple scattering approach

T. Jarlborg: Effects of thermal disorder and zero-point motion on core levels in purple bronze

Lunch 13:30
1 - M. Araidai: *Electronic States of two-dimensional crystals of group IV element on α-Al₂O₃(0001) surfaces*

2 - A. Banas: *ISMI beamline at Singapore Synchrotron Light Source in service of nanometers-thick films analysis*

3 - A. Beniya: *Molecular-dynamics simulation of water absorbed on nanocarbon surface: structure and its influence on tribology*

4 - A. Bukaluk: *Investigation of silver growth and surface diffusion on polycrystalline tungsten surface*

5 - G. Castorina: *An analytical model for evaluating the effective skin depth in multilayer structures*

6 - C. W. Chen: *Inspection of ALD cobalt thin film incubation by using Magnetic Force Microscopy*

7 - G. Cinque: *Local refractive index variation of FIB milled CVD diamond areas via Raman and IR microreflectivity*

8 - K. N. Eltsov: *Adsorption of O₂ on Ag(111): Evidence of Local Oxide Formation*

9 - J. Falta: *Isotropic thin PTCDA films on GaN(0001)*

10 - K. Hatada: *EUSpec - Modern tools for spectroscopy on advanced materials: a European modelling platform*

11 - A. Hattori: *Edge states and electron transport of silicene, germanene and stanene nanoribbons with edge hydrogen terminations*

12 - Y. Hoshi: *Crossover of 2D and 3D growth during chemical vapor deposition of graphene on Cu-In alloy observed by in-situ scanning electron microscopy*

13 - T. Hyodo: *Analysis of Surface Structure with Total-Reflection High-Energy Positron Diffraction (TRHEPD)*

14 - M. Imamura: *Unoccupied Electronic structure of BiAg surface alloy studied with angle-resolved two-photon photoemission spectroscopy*
15 - J. Kanasaki: Electronic structure of surface conduction band of Ge(001)-c(4x2) and Ge(111)-c(2x8) surfaces studied by two-photon photoelectron spectroscopy

16 - H. Kishimoto: Electrical conductivity of the biaxially-strained GaSb (111) and GaSb (001)

17 - S. Konabe: Thermal property modulation of graphene by strain-induced phonon engineering

18 - T. Koyama: Characterization of interfacial water layer between single-layer graphene and substrate by Raman spectroscopy

19 - G. Lee: Experimental identification of Indium single layer and double layer formed on Si(111)- √7×√3 surface


21 - S. Macis: Microdrop deposition technique: preparation and characterization of ultradiluted samples

22 - A. Meilakhs: New theory of Raman peak redshift in thin films

23 - I. Miccoli: Electron Interference in Ballistic Graphene Nanoconstrictions

24 - P. Mutombo: Interaction of gold with a pinwheel TiO~1.2 film formed on Rh(111) facet: STM and DFT studies

25 - M. Oda: Effects of Surface Substituents on Electronic Structures of a Cerasome Model

26 - S. Ogawa: Interface oxidation enhancement at SiO₂/Si(001) by raising O₂ Pressure

27 - T. Skála: Cerium tungstate as model catalyst support

28 - K. Takahashi: Electronic structure of ultrathin Bi(110) films on epitaxial graphene studied by SR and laser photoemission spectroscopy

29 - M. Ushirozako: Structural stability of graphene nanoflakes

30 - A. Zdyb: Optimization of ZnO:Al layers for applications in thin film solar cells
Chairperson: A. Ya. Vul, D. Sébilleau

09:20 T. Nakayama: Multiple-probe STM study on materials that think

09:40 K. Ludwig: Co-GISAXS as a New Tool to Investigate Surface Growth Dynamics

10:00 P. Evans: Atomic-to-mesoscale structure of buried quantum electronic interfaces

10:20 A. Ricci: Non-euclidean geometries in high temperature superconductors

10:40 A. Marcelli: Molybdenum oxides films: conductivity properties vs. work function

Coffee break 11:00

Chairperson: A. Ricci, S. Bellucci

11:30 P. Castrucci: Carbon nanotubes/silicon hybrid heterojunctions for solar cell applications

11:50 E. G. Michel: Self-Assembly and Surface Electronic Structure: the Case of Pentacene and Tetracene on noble metal (110) surfaces

12:10 A. Irizawa: Nonlinear response on solids by intense THz wave

12:30 S. Schippers: Photon induced ionization and fragmentation of isolated (endohedral) fullerenes by XUV radiation

12:50 A. Molle: Epitaxial Silicene: Application to Nanoelectronic

13:10 A. Saranin: Spin-Split Metallic Surface States of 2D Alloys and Compounds

Lunch 13:30
14:30 M. E. Dávila: 2D germanene layers
14:45 W. W. Larry Pai: Atomic view of metal atom intercalation into black phosphor
15:00 A. Stępiak-Dybala: Initial stage of growing of Si on Si(111)√3-√3-Pb surface
15:15 O. Kubo: Electronic Properties of Nanoribbons: Graphene and Silicene
15:30 O. Deniz: Accessing the electronic structure of armchair graphene nanoribbons by in-situ intercalation
15:45 S. Chiashi: Photoluminescence Imaging Spectroscopy of Water Adsorption Layer on a Suspended Single-walled Carbon Nanotube

Coffee break 16:00

16:30 A. Ishii: Density functional calculation Au, Pt and Ru adatom on CeO₂, ZrO₂ and Al₂O₃ surfaces for catalysis
16:45 D. Farias: Helium diffraction and acoustic phonons of graphene grown on copper catalysts
17:00 K. Yagyu: Neutralization of an epitaxial graphene on the SiC(0001) by means of palladium intercalation
17:15 R. Zdyb: Giant Rashba-type splitting of surface states in Pb nanoribbons on Si(553)
17:30 K. Kobayashi: IV-VI monolayers with alkaline-earth chalcogenide supports
14:30 K. Sakamoto: Non-vortical Rashba spin structure induced by the $C_{1h}$ symmetry of the surface

14:45 M. Ichikawa: Theory of localized plasmons for 2D and 3D metal nanostructures in the random phase approximation

15:00 K. Medjanik: Giant Circular Dichroism in Soft X-ray Photoelectron Diffraction and Valence-Band Photoemission from W(110) and Ir (111)

15:15 O. Molodtsova: HR-TEM and HR-PES studies of metal nanoparticles in organic molecular thin film


15:45 A. Akaishi: Interfacial water layer on doped graphene surfaces

Coffee break 16:00

16:30 P. Kocán: Interaction of copper phthalocyanines with metal-passivated Si surfaces – assembly and dynamics

16:45 N. Lorente: Magnetic spectra of atomic and molecular adsorbates

17:00 P. Sobotik: Formation of bimolecular structures on metal-passivated silicon substrates

17:15 W. Wang: Atomic and Electronic Structure of half-Hydrogenated Silicene on Ag(111): A Study by LEED, STM and ARPES

17:30 D. Di Gioacchino: Metastability phenomena and high magnetic field effects in VO$_2$ thin film
Chairperson: **B. Joseph, A. Cricenti**

**09:20** Y. Yamada-Takamura: *Silicene, germanene, and something in between*

**09:40** Yi Du: *Observation of van Hove singularities in multilayer silicene*

**10:00** Si Zhou: *Ab initio explorations of elemental 2D materials beyond graphene*

**10:20** P. Soukiassian: *Nanostructures and nanochemistry at graphene and silicon carbide surfaces and interfaces*

**10:40** T. Angot: *Hydrogenated Silicene*

**Coffee break 11:00**

Chairperson: **M. Ichikawa, S. Zhou**

**11:30** M. Tsukada: *From SPM to Transport in Molecules -Theoretical Aspects-

**11:50** F. Bechstedt: *Exotic properties of group-IV honeycomb crystals*

**12:10** D. Sébilleau: *A complete multiple scattering approach to core EELS cross-section*

**12:30** G. Schönhense: *Rapid Fermi-Surface, Fermi-Velocity and Spin Mapping Using ToF k-Microscopy: Application to Topological Systems*

**12:50** B. Joseph: *A reinvestigation of the high pressure structural phase diagram of black phosphorous*

**13:10** D. Pergolesi: *In situ diagnostic of stress generation and evolution in oxide heterostructures*

**Lunch 13:30**
Chairperson: A. Marcelli, P. Evans

14:30 K. Banas: Optimization of experimental conditions for characterization of thin films in the infrared region of electromagnetic spectrum

14:45 D. Fong: The Initial Stages of ZnO Thin Film Growth by Atomic Layer Deposition

15:00 C. Brylinski: Atomic Layer Deposition of ZnO onto GaN and SiC (000.) surfaces: is this True Epitaxy?

15:15 P. Brunkov: Application of the AFM tip for local modification of the electrical potential and topography profile of atomically flat semiconductor surfaces

15:30 M. Bera: The simultaneous detection of the near-surface and bulk coordination environments of a trivalent metal cation (europium) in an aqueous solution by use of X-ray absorption spectroscopy

Coffee break 15:45

Chairperson: A. Bianconi, P. Soukiassian

16:10 M.A. Van Hove: Motor molecules

16:30 K. Dziedzic-Kocurek: Nanoparticle mobility in organic media - a model of motion at the cellular level

16:45 A. Cricenti: SNOM spectroscopy for tissue imaging and cancer diagnostics

17:00 M. D’Acunto: Near-Field identification of gold nanoshells inside cells

17:15 T. Kawahara: Development of the nano-carbon bio sensors using glycan for influenza virus

Closing Remarks 17:30