

ICFSI Program

Plenary, Invited and Oral Sessions

08 | 20 Monday

08:30-09:00 **Opening Session**

Chair: E. F. da Silva Jr.

Co-Chair: A. F. da Silva

Table: P. Soukiassian

H. Hasegawa

D. Zahn

Session I

Chair: P. Soukiassian

09:00-09:50 **U. Karlsson.**

PLE1 Frontiers of Surface and Interface Semiconductor Science: what have we learned and what may we still discover.

09:50-10:15 **D. Bimberg.**

INV1 Onion-like growth and inverted many-particle energies in quantum dots.

10:15-10:30 **S. Gonda**, H. Tsutsumi, R. Ishigami, K. Kume,
Y. Ito, M. Ishida and Y. Arakawa.

ORA1 Proton Radiation Effects in Quantum Dot Lasers.

10:30-10:45 **S. E. Schacham** and E. Finkman.

ORA2 Two photon processes in photoconductivity
of SiGe quantum dots.

10:45-11:10 **Coffee Break**

Session II

Chair: **D. Bimberg**

11:10-11:35 **H. Hasegawa** and M. Akazawa.

INV2 Surface passivation technology for III-V semi-
conductor nanoelectronics.

11:35-11:50 **R. H. Miwa**, T. B. Martins and A. Fazzio.

ORA3 Hydrogen adsorption on boron doped graphene:
an ab initio study.

11:50-12:05 **M. V. Batistuta**, M. F. Stella and J. C. da Costa.

ORA4 Dynamic model for coupled quantum dots at
finite temperatures.

12:05-12:20 **T. F. Wietler**, E. Bugiel, and K R. Hofmann.

ORA5 Tuning Strain Relaxation by Surface-Morphology: Surfactant-Mediated Epitaxy of Germanium on Silicon (100) and (111).

12:20-14:00 **Lunch**

Session III

Chair: I. Hernández-Calderón

14:00-14:25 **A. J. Nozik**, R.J. Ellingson, M. Beard, M. Hanna, A. Shabaev, A. L. Efros.

INV3 Carrier Dynamics and Multiple Exciton Generation in Semiconductor Nanocrystals: Relevance to Third Generation Solar Photon Conversion.

14:25-14:50 **G. Medeiros-Ribeiro**, M. S. Leite, T.P. Mayer Alegre, and F. G. G. Hernández.

INV4 Quantum dot composition profiles: mechanisms, thermodynamics and effects on the electron spin.

14:50-15:05 R. Leitsmann, **F. Bechstedt**, H. Groiss, F. Schäfler, W. Heiss, K. Koike, H. Harada, and M. Yano.

ORA6 Structural and electronic properties of PbTe/CdTe(100) interfaces.

15:05-15:20 **C. R. Leão**, A. Fazzio and A. J. R. da Silva.

ORA7 Surface and Interface effects in Semiconductor Nanowires.

15:20-15:35 **U. Seidel** and T. Hannappel.

ORA8 Interface studies of an MOVPE-prepared In GaAs/GaAsSb tunnel junction.

15:35-15:50 **R. Miotto**, S. I. Souza, and A. C. Ferraz.

ORA9 Hydrogen sulfide interaction with InP(001).

15:50-16:05 **H. M. Zhang**, K. Sakamoto, and R.I.G. Uhrberg.

ORA10 High temperature annealing and surface photo voltage shift on Si(111)7x7.

16:05-16:30 **Coffee Break**

Session IV

Chair: G. M. Spahi

16:30-16:55 **G. Le Lay**.

INV5 Adatoms dynamics and phase transitions at prototypical metal-semiconductor interfaces.

16:55-17:20 Y. Sugimoto, P. Pou, **P. Jelinek**, M. Abe, S. Morita,
R. Pérez, O. Custance.

INV6 Single-atom chemical recognition at room temperature using nc-AFM.

17:20-17:35 **L. Hamelin**, S. Ledain, C. Bunel, and E. Dufour-Gergam.

ORA11 Copper interconnect optimization in Si-based System in Package.

17:35-19:00 **Poster Session I**

Chair: H. Leite Alves

Session V

Chair: S. Bent

09:00-09:50 **R. Martel**

PLE2 Electro-Optical Properties of Single Walled Carbon Nanotubes.

09:50-10:15 **A. Fazio.**

INV7 Electronic, structural and transport properties of defects on carbon nanotubes and graphenes.

10:15-10:30 **F. Flores, P. Sundqvist, F. J. Garcia-Vidal, M. Moreno, C. Gomez-Navarro, S. Bunch and J. Gomez-Herrero.**

ORA12 On the conductance of single walled carbon nanotubes: ballistic, diffusive and localized regimes: The role of electron-phonon interaction and defects.

10:30 -10:45 **H. Hiraki and A. Hiraki.**

ORA13 Unique carbon-nano-structure for high quality electron-emitter.

10:45-11:10 **Coffee Break**

Session VI

Chair: A. Fazio

11:10-11:35 S. Erwin.

INV8 Doping - the intentional introduction of impurities into a material - is fundamental to controlling the properties of bulk semiconductors.

11:35-11:50 K. A. Fichthorn and M. Mignogna.

ORA14 Accelerated Molecular Dynamics of the Structure and Dynamics of GaAs(001) 2(2x4)

11:50-12:05 P. Jelinek, R. Pérez, J. Ortega and F. Flores.

ORA15 Enhanced chemical reactivity of gold monoatomic chains: first principles simulations.

12:05-12:20 K. Masuda-Jindo and V. V. Hung.

ORA16 Calculation of the Electronic and Thermodynamic Properties of Semiconductor Heterostructures Using the Statistical Moment Method.

12:20-14:00 Lunch

Session VII

Chair: M. Henini

14:00-14:25 **T. P. Ma.**

INV9 Electrical Characterization of High-k Gate Dielectrics on Semiconductors.

14:25-14:50 **Z. J. Horváth, T. Jászi, A. E. Pap, G. Molnár, C. Dücső, P. Basa, K. Nagy, L. Dobos, B. Pécz, L. Tóth, P. Szöllősi, and T. Szabó**

INV10 Si₃N₄ based nanocrystal memory structures.

14:50-15:05 **C. Teichert, G. Hlawacek, A. Andreev, H. Sitter, N. S. Sarciŧtci, R. Resel, S. Berkebile, G. Koller, M. Ramsey.**

ORA17 Controlling Molecular Orientation in Para-sexiphenyl Thin Films

15:05-15:20 **H. W. Leite Alves, C. C. Silva, A. T. Lino, P. D. Borges, L. M. R. Scolfaro and E. F. da Silva Jr.**

ORA18 Electronic, Vibrational and Related Properties of Group-IV Metal Oxides by Ab Initio Calculations.

15:20-15:35 **L. Bhusal and A. Freundlich.**

ORA19 Assessment of electronic properties of In_{Nx}Sb_{1-x} for the Long-wavelength infrared detector applications.

15:35-15:50 Charley B. E. dos Santos and **T. M. Schmidt**

ORA20 Structure, Electronic Properties and Surface Saturation of GaP Nanowires

15:50-16:05 **T. G. G. Maffei**s, M. W. Penny, K. W. Liew, D. Yung, N. Tsolakoglou, S. P. Wilks.

ORA21 Scanning probe microscopy of ZnO nanobelts

16:05-16:30 **Coffee Break**

Session VIII

Chair: A. Freundlich

16:30-16:55 **A. Janotti** and C. G. Van de Walle

INV11 Oxide heterojunctions

16:55-17:20 **M. Ichikawa**

INV12 Characterization of semiconductor nanostructures formed by using ultrathin Si oxide technology

17:20-17:35 **L. Rousseville**, S. Ledain, P. Le Duc, C. Bunel and B. Domengès.

ORA22 Electroless Ni/ Immersion Au deposition on electroplated Cu pads for Silicon-based System in Package (SbSiP) Technology

17:35-19:00 **Poster Session II**

Chair: V. Anjos

20:00-23:00 **Happy Hour**

Chair: E. F. da Silva Jr.

08 | 22 Wednesday

Session XIX

Chair: R. Martel

09:00-09:50 **L. Pavesi.**

PLE3 Low Dimensional Silicon Structures for Photonic and Sensor applications.

09:50-10:15 K. Seino, J. M. Wagner and **F. Bechstedt.**

INV13 Interface influence on electronic and optical properties of Si(001)-SiO₂ structures.

10:15-10:30 **S. Ossicini, F. Iori, E. Degoli, R. Magri, G. Cantele, D. Ninno, F. Trani, O. Pulci.**

ORA23 Codoping goes Nano: Structural, Electronic and Optical Properties of Boron and Phosphorus Codoped Silicon Nanocrystals.

10:30 -10:45 **J. L. Gole, S. Lewis, A. Fedorov, S. Prokes.**

ORA24 Nanostructures and Porous Silicon: Activity at Interfaces in Sensors and Photocatalytic Reactors.

10:45-11:10 **Coffee Break**

Session X

Chair: **F. Bechstedt**

11:10-11:35 **J. Jia.**

INV14 The novel properties induced by quantum size effects in the metal thin films on Si(111).

11:35-11:50 **S. Chandola, N. Esser, K. Fleischer, J. Jacob, K. Hinrichs and J. F. McGilp.**

ORA25 Optical characterisation of electronic confinement in epitaxial Ag films grown on one-dimensional superstructures on Si(111).

11:50-12:05 **J. M. MacLeod, D. Psiachos, A. G. Mark, M. J. Stott, A. B. McLean.**

ORA26 Patterned Growth of Nanoscale In Clusters on the Si(111)-7x7 and Si(111)-Ge(5x5) Reconstructions.

12:05-12:20 **S. A. Vitusevich**, A. M. Kurakin, R. V. Konakova,
A. E. Belyaev, and N. Klein.

ORA27 Improvement of interface properties of AlGa_N/
Ga_N heterostructures under gamma-radiation.

12:20-19:00 **Conference Excursion**

08 | 23 Thursday

Session XI

Chair: L. Pavesi

09:00-09:50 **S. F. Bent.**

PLE4 Organic Functionalization of Semiconductor
Surfaces.

09:50-10:15 **W. G. Schmidt.**

INV15 Organic molecule adsorption on solid surfaces
from a first-principles theory perspective.

10:15-10:30 **P. Vogt**, R. Paßmann, T. Bruhn, C. Friedrich,
G. Gavrilu, B.O. Fimland, D. R. T. Zahn,
W. Braun, W. Richter and N. Esser.

ORA28 Bonding configuration of Cyclopentene and
1,4-Cyclohexadiene on GaAs(001) surfaces

10:30 -10:45 **B. S. Santos**, P. M. A. Farias, F. D. Menezes,
R. C. B. Q. Figueirêdo, A. Fontes,
D. P. L. A. Tenório, R. Ferreira.

ORA28 New highly fluorescent biolabels based on II-VI semiconductor hybrid organic-inorganic nanostructures for bioimaging

10:45-11:10 **Coffee Breack**

Session XII

Chair: W. G. Schimdt

11:10-11:35 **S. L. Molodtsov**.

INV16 Spectroscopic studies of metallized biological nanostructures.

11:35-11:50 **P. M. A. Farias**, B. S. Santos, F. D. Menezes,
R. C. B. Q. Figueirêdo, L. Romão, J. O. Amaral,
A. Fontes, A. Galembeck, C. R. Chaves, V. Moura-Neto.

ORA30 Colloidal semiconductor quantum dots: potential tools for new diagnostic methods.

11:50-12:05 **C. Teichert**, G. Hlawacek, A. Andreev,
H. Sitter, N.S. Sarciftci, R. Resel, S. Berkebile,
G. Koller, M. Ramsey.

ORA31 Controlling Molecular Orientation in Para-sexiphenyl Thin Films.

12:05-12:20 **V. Yu. Aristov**, V. Molodtsova, V. Maslyuk,
D. V. Vyalikh, V. M. Zhilin, . A. Ossipyan,
T. Bredow, I. Mertig, M. Knupfer.

ORA32 Morphology and electronic properties of
CoPc/Au(001)-5x20: experiment and theory.

12:20-14:00 **Lunch**

Session XIII

Chair: **G. Medeiros-Ribeiro**

14:00-14:25 **J-P. Leburton**

INV17 “Detection of bio-molecules through semicon-
ductor nanopores”.

14:25-14:50 **P. R. Dunstan.**

INV18 Quantum dots, organic dyes and the imaging of
bio-molecules using near-field interactions.

14:50-15:05 **A. Fontes**, B. S. Santos, P. M. A. de Farias,
C. R. Chaves, R. C. B. Q. Figueiredo,
F. D. de Menezes and A. Galembeck.

ORA33 Application of core-shell pegylated CdS/
Cd(OH)₂ quantum dots as biolabels of Trypano-
soma cruzi parasites.

15:05-15:20 **H. Vázquez**, M. Brandbyge and A. P. Jauho.

ORA34 Metal-molecular wire interfaces: energetics and conduction properties.

15:20-15:35 H. B. de Carvalho, Y. Galvão Gobato, M. J. S. P. Brasil, V. Lopes-Richard, G. E. Marques, **M. Henini** and G. Hill.

ORA35 Hole Spin polarization in p-type double barrier diodes.

15:35-15:50 H. B. de Carvalho, M. J. S. P. Brasil, **Y. Galvão Gobato**, G. E. Marques, H. V. A. Galeti, M. Henini and G. Hill.

ORA36 Spin polarized electron gas in p-i-n resonant tunneling diodes.

15:50-16:05 **K. Fleischer**, J. Jacob, S. Chandola, N. Esser, and J. F. McGilp.

ORA37 Using reflectance anisotropy spectroscopy to characterise capped metal nanostructures grown on silicon.

16:05-16:30 **Coffee Breack**

Session XIV

Chair: T. P. Ma

16:30-16:55 **I. Ohdomari.**

INV19 nm-Scale Modification of Solid Surfaces for Novel Function Creation.

16:55-17:20 **M. R. Singh.**

INV20 Switching mechanism and polarization catastrophe in nanostructures doped in photonic and polaritonic band gap materials.

17:20-17:35 **M. Wegscheider, C. Simbrunner, A. Navarro-Quezada, M. Quast, Tian Li, H. Sitter, A. Bonanni.**

ORA38 Periodic Mg distribution in GaN:d-Mg and its effect on structural, optical and electrical properties.

17:35-17:50 **A. Freundlich, C. Rajapaksha, A. Feltrin, G. Radhakrisnan.**

ORA39 Extracting the shape and the size of quantum dots by reflection high energy electron diffraction.

17:50-18:05 M. R. Singh and R. H. Lipson.

ORA40 Electron-bound photon coupling in nanoparticles doped in nonlinear photonic crystals

20:00-23:00 **Conference Banquet**

08 | 24 Friday

Session XV

Chair: U. Karlsson

09:00-09:50 **P. G. Soukiassian.**

PLE5 From Atomic Defects to Nano-Objects and Nanochemistry at Semiconductor Surfaces and Interfaces.

09:50-10:15 **M. Scheffler**, H. Wu, J. Hashemifar, M. Hortamani and Peter Kratzer.

INV22 Density-functional theory study of half-metallic heterostructures: Transition-metal silicides and Mn δ -doping in Si.

10:15-10:30 **D. R. Miquita**, J. C. González, M. I. N. da Silva, M. V. B. Moreira, R. Paniago, R. R. Andrade, R. Magalhães-Paniago and A. G. de Oliveira.

ORA41 Morphologic and structural aspects of the growth process of iron silicides.

10:30 -10:45 **T. Watahiki**, B. P. Tinkham, B. Jenichen, R. Shayduk, W. Braun and K. H. Ploog.

ORA42 Praseodymium silicide formation at the Pr₂O₃/Si interface.

10:45-11:10 **Coffee Breack**

Session XVI

Chair: M. Scheffler

11:10-11:35 **I. Hernández-Calderón.**

INV23 The influence of surface reconstruction in the layer-by-layer growth of thin and ultra-thin II-VI quantum wells.

11:35-11:50 **P. Deák**, B. Aradi, T. Frauenheim.

ORA43 The critical role of temperature in the properties of the hydrogenated 3C-SiC(001) 3x2 surface.

11:50-12:05 G. Gavrilă, W. Braun and **D. R. T. Zahn.**

ORA44 Electronic Properties of Highly Ordered CuPc Thin Films.

12:05-12:20 **2007 SSIN Prize
Cerimony and Closing**

Chair: E. F. da Silva Jr.

Co-Chair: A. F. da Silva

12:20-14:00 **Lunch**

14:00-23:00 **Departure**