

IEEE NANO 2018 Programme: Oral Presentations

Track 1. Nanoelectrochemical Sensors I: Fundamentals, Design and Simulation

Speaker	Paper Title
Paul Bohn	Electrochemical Zero-Mode Waveguide Studies of Single Enzyme Reactions
Wolfgang Ensinger	iNAPO: an electrochemical molecule sensor based on a single ion conducting nanopore in polymer foil
Sungho Kim	Modeling of a Stacked Gated Nanofluidic Channel
Yu-Sheng Lin	A large-scale lithography-free plasmonic color filter for effectively glucose sensing
Ian Seymour	Interdigitated nanowire electrode arrays for enhanced electrochemical sensing

Track 1. Nanoelectrochemical Sensors II: Fabrication, Systems and Applications

Speaker	Paper Title
Aoife Morrin	Transducing Responsive Hydrogel Behaviour Using Impedance Spectroscopy
Alessandro Giuseppe D'aloia	Porous Graphene based PVDF Aerogel Composite for Sweat Sensing Applications
Aidan Murphy	Collector Generator Voltammetry Data Acquisition for Nanowire Interdigitated Sensors
Bruno Matarese	A novel acoustic probe based on a nano electrochemical sensor membrane

Track 1. Nanosensors & Nanoactuators: Surface-enhanced Raman Spectroscopy

Speaker	Paper Title
Howbeer Muhamad Ali	Surface-enhanced Raman scattering and the chemical nature of biology
Sawsan Almohammed	Nucleobase Detection Using Peptide Nanotube And Silver Nanoparticle SERS Template
Ardeshir Moeinian	Single Silicon Nanowire SERS Probes for Highly Localized Optical pH Sensing
Wei-chuan Shih	Label-free Biomolecular Sensing by SERS on Nanoporous Gold Nanoparticle Arrays
Yonhua Tzeng	Graphene Quantum Dots and Silver Nanoparticles Based High Sensitivity SERS Molecular Sensors

Track 1. Nanosensors & Nanoactuators: Piezoelectric Sensors & Actuators

Speaker	Paper Title
Paul Muralt	Piezoelectric Thin Films for MEMS and NEMS
Michael Schneider	Substrate temperature and bias voltage dependent properties of sputtered AlN thin films for BAW applications
Rodolfo Araneo	Nonlinear Elasticity Effects in Core-Shell III-N Piezo-Semiconductive Nanowires
Hye Jin Kim-	Flexible ceramic-polymer nanocomposite piezoelectric pressure sensor

Track 1. Nanosensors & Nanoactuators: Biophotonics	
Speaker	Paper Title
Kishan Dholakia	New routes for wide field optical imaging at depth
Shashi Karna	Protein-Templated Near-Infrared Emitting Fe Nanoclusters Exhibit Superparamagnetism at Room Temperature
Marius Jankauskas	Amplifying organic semiconductor waveguide based nanocrystal sensor
John David Gordon	Surface Plasmon Resonance Induced Photothermal Lysis of the Cell
Ajay Agrawal	Enhanced sensitivity of SPR sensing and imaging using plasmonic nanopillar arrays and nano-gratings
Track 1. Nanosensors & Nanoactuators: Materials Design & Development	
Speaker	Paper Title
Assel Ryspayeva	PEI/Ag as an optical gas nano-sensor for intelligent food packaging
Enkeleda Dervishi	Polymer membranes with tunable porosities for nanoscale fluidic devices and 2D nanomaterial transfer
Lina Tizani	Fabrication and Optimization of Graphene membrane for Gas Sensor Applications
George Simon	Flexible Polymer-Copper Nanowire Composites for Thermal and Sensor Applications
Track 2. Nanoenergy for Smart Things: Energy Harvesting & Conversion I	
Speaker	Paper Title
Clas Persson	Copper-based chalcogenides for ultrathin inorganic solar cells
Donald Lupo	Highly Flexible Environmentally Friendly Printed Supercapacitors
Jiwon Park	Flexible fiber based woven structured triboelectric nanogenerator for self-powered system
Sven Kirbach	Piezoelectric Hafnium Oxide Thin Films for Energy Harvesting Applications
Domenico Cavallini	PFM Characterization of Piezoelectric PVDF/ZnO-Nanorod thin films
Track 2. Nanoenergy for Smart Things: Energy Harvesting & Conversion II	
Speaker	Paper Title
Swatchith Lal	Fabrication of micro-thermoelectric cooler for the thermal management of photonic devices
Jared Stanley	Machine Learning Bandgaps of Inorganic Mixed Halide Perovskites
Thomas Oliver	Investigating Electron-Phonon Coupling in Formamidinium Lead Iodide Perovskite Using Ultrafast Laser Spectroscopy
Anand Kumar	Cellulose Assisted Combustion Synthesis of Nanomaterials for Energy Conversion Applications
Lu LU	Nanogenerators based on piezoelectric GaN nanowires grown by PA-MBE and MOCVD
Daniel Choi	Thermoelectric Properties of Solvothermal Grown Bismuth Telluride Hexagonal Nanoplates

Track 2. Nanoenergy for Smart Things: Nanomaterials for Energy Storage	
Speaker	Paper Title
Wenke Weinrich	Materials for on-chip Energy Storage
Tao Le	Unveiling the ionic exchange mechanisms in vertical graphene nanosheet supercapacitor electrodes with ac-electrogravimetry
Adrien Mery	Conducting polymers as electroactive binders for Si and Si@C nanoparticle electrodes in Li-ion batteries
Louise McGrath	High Energy Density Germanium as Lithium Battery Anodes in Organic and Ionic Liquid Based Systems
Track 3. Nanoelectronics: New Materials I	
Speaker	Paper Title
Yann-michel Niquet	Carrier mobilities and contact resistances in nanowire devices
Jianping Hu	Optimizations of Negative Capacitance Independent Dual-Gate FinFETs
Ryota Nezasa	Evaluation of Si Nanowire MOS Capacitor Using High-k Dielectric Materials
Kenichi Kawaguchi	Type-II p-GaAsSb/n-InAs Nanowires under Conditions for Tunnel Junction Formation
Track 3. Nanoelectronics: New Materials II	
Speaker	Paper Title
Walter Schwarzenbach	Substrate engineering enables CMOS technology scaling to 12nm and beyond
Marilyne Sousa	Monolithic integration of III-V on Si applied to lasing micro-cavities: insights from STEM and EDX
Bodo Kalkofen	Atomic layer deposition of phosphorus oxide films as solid sources for doping of semiconductor structures
Amy Kirwan	Towards Direct Gap Emission in GeSn and GeC: a Hybrid Functional DFT Analysis
Christopher Broderick	Theory of localisation and band mixing effects in direct-gap Ge(C,Sn) group-IV alloys
Track 3. Nanoelectronics: 2D Materials	
Speaker	Paper Title
Georg Duesberg	Sensors based on 2D transition metal dichalcogenides
Maggie Yihong Chen	All Inkjet-Printed High On/Off Ratio Two-Dimensional Materials-based Field Effect Transistor
Dan Xie	The electrical performances of monolayer MoS ₂ -based transistors under ultra-low temperature
Chaojian Hou	Plasmon-Enhanced Photovoltaic Characteristics of Black Phosphorus–MoS ₂ Heterojunction
Cian Cummins	Combining transition metal dichalcogenides and block copolymer templates for future devices

Track 3. Nanoelectronics: Advanced Memories I	
Speaker	Paper Title
Jonathan Alaria	Designing (non-composite) room temperature “multiferroics”
Stephan Menzel	Multiscale Simulation of ReRAMs Based on the Valence Change Mechanism
Stephen Porter	FE Switching in SrRuO ₃ /NiFe ₂ O ₄ /BaTiO ₃ /LSMO Heterostructures on SrTiO ₃ Substrates
Abdelkader Souifi	Indium Oxide Nanostructure Optimization for RRAM Integration on CMOS BEOL
Track 3. Nanoelectronics: Advanced Memories II	
Speaker	Paper Title
Boris Hudec	Three dimensional integration of ReRAMs
Alexander Hardtdegen	Characterization of HfO ₂ /TiO ₂ ReRAM Cells in Pulsed Operation Mode
Huaqiang Wu	A Novel RRAM Based PUF with High Reliability for Anti-Machine Learning Attack
Tae-Sik Yoon	Metal-Oxide-Semiconductor Memcapacitors for Nonvolatile Memory and Artificial Synaptic Devices
Eunhye Baek	Tunable memory of Si nanowire FETs using ion modulation in sol-gel derived gate layer
Track 3. Nanoelectronics: Characterisation and Nanowire Devices	
Speaker	Paper Title
Qi Chen	Electrical characterization of truncated-pyramidal silicon nanopores in electrolyte solution
Stephen Porter	Direct Piezoelectric Force Microscopy: Applications Towards the Characterisation of Multiferroic stacks
Matthew Bauer	Arrays of Janus-Type Magnetoelectric Nanowires for Passive Magnetic Field Sensing
Violetta Sessi	Junction tuning by ferroelectric switching in silicon nanowire Schottky field effect transistors
Track 3. Nanoelectronics: New Materials III	
Speaker	Paper Title
Gregor Mussler	In-situ grown topological insulator / superconductor junctions for detecting Majorana bound states
Jana Andzane	Vapour-solid deposition and enhanced thermoelectric properties of nanostructured bismuth selenide films.
Yingpeng Zhen	Synthesis and Characterization of WO ₃ Electrochromic Thin Films
Thottam Kalkur	Verilog-A modeling of filamentary-based complementary resistance switching devices

Track 3. Nanoelectronics: Brain-Inspired Circuits & Architectures

Speaker	Paper Title
Megumi Ito	Lightweight Refresh Method for PCM-based Neuromorphic Circuits
Hugh Manning	Neuromorphic-Inspired Behaviour in Core-Shell Nanowire Networks
Colin O'Callaghan	Self-Similar and Neuromorphic Properties in Core-Shell Nanowire Network Systems
Shota Shirai	Complex network dynamics in self-assembled atomic-switch networks: prospects for neuromorphic computation
Junxiu Liu	Bio-inspired Anomaly Detection for Gas Sensors

Track 3. Nanoelectronics: Graphene based devices

Speaker	Paper Title
Jake Mehew	Ionic Polymer Gated WS ₂ -Graphene Photodetectors
Amal Alamri	Photonic Single Crystal Heterostructures based on Perovskites/Molybdenum disulfide
Shunei Suzuki	Scaling effect on device performance in graphene tunnel field effect transistors
Igor Wlasny	Modification of graphene/h-BN heterostructures induced by focused laser beam
George Kliros	Study of Strain Effects on Graphene Nanoribbon FETs Using Quasi-ballistic Transport Model
Li Tao	Photo-assisted depletion capacitance engineering in graphene-Al ₂ O ₃ -silicon interfacial gated photodetector

Track 3. Nanoelectronics: New Device Architectures I

Speaker	Paper Title
Benoit Bertrand	Development of spin quantum bits in SOI CMOS technology
Paolo La Torraca	Printed Technology Solutions for Audio Transducers
Pinaki Mazumder	Fano-resonance based metamaterial THz sensor
Fabio Niosi	Winner-Takes-All path formation within highly disordered nanowire networks.
Stefan Schierle	Sub kilovolt electrostatic elastomer actuator with silver nanowire electrodes

Track 3. Nanoelectronics: Advanced Processes for Semiconductor Devices

Speaker	Paper Title
Ys Kim	Sb co-Doping to Enhance Phosphorous Level on Ge Using Ion Decoupled Plasma Process
Ghada Dushaq	Nano-Mechanical Probing of Threading Dislocation in Ge-on-Si Films
Andrea Notargiacomo	Scanning probe assisted local oxidation nanolithography of CVD grown graphene on Ge(100)
Andrei Fedorov	Focused Electron Beam Patterning, Fusing and Property Modulation of Graphene and Graphene Oxide Electronic Devices
Pietro Pampili	Dense GaN nanocolumn arrays by hybrid top-down-regrow approach using nanosphere lithography

Track 3. Nanoelectronics: New Device Architectures II	
Speaker	Paper Title
Jiaona Zhang	Embedding Langmuir-Blodgett Carbon Nanotube Array to Enhance Performance of Amorphous InGaZnO Thin Film Transistor
Dominique Baillargeat	Carbon nanotubes based RF packaging solutions
Yongwoo Lee	Semiconducting Carbon Nanotube Schottky Diode and Integrated Circuit Applications
Avishek Roy	Direct Synthesis of Carbon Nanotubes in CMOS – Layout of Micro-heaters
Eloisa Ferrone	Thermal oxidation of Ball-Milled ZnO doped powders for synthesis of nanomaterials
Track 3. Nanoelectronics: Novel Devices and Processes	
Speaker	Paper Title
Manuel Escudero López	On the Variability-aware Design of Memristor-based Logic Circuits
Reza Arkani	Computational design of metamorphic In(N)AsSb mid-infrared light-emitting diodes
Waldemar Kaiser	Simulation of Enhanced Exciton Diffusion in Organic Solar Cells with Phosphorescent Sensitizers
Dominik Fajstavr	Preparation of composite periodic metal-polymer nanostructures
Olga Ishchenko	Strongly electronic-correlated material for ultrafast electronics application
Jianping Hu	Dual-Threshold Independent-Gate N-type TFETs
Track 4. Multi-scale Simulation I	
Speaker	Paper Title
Stefan Wippermann	Optimizing materials for energy harvesting: in search for descriptors
Geoffrey Hautier	TBC
Miguel Caro	Understanding the growth mechanism of tetrahedral amorphous carbon with a machine-learning based interatomic potential
Ekaterina Filatova	Investigating the difference in nucleation during Si-based ALD on different surfaces for future area-selective deposition
Track 4. Multi-scale Simulation II	
Speaker	Paper Title
Graeme Watson	Multiscale modeling of doped ceria and its interfaces
Stefan Bromley	Tracking the Properties of Oxide Materials from Nanoscale to Bulk
Giulia Righi	Reduction Properties of (001) Maghemite Surfaces

Tracks 2&4. Nanoenergy for Smart Things: Simulation of Materials for Energy Harvesting and Storage

Speaker	Paper Title
Nenad Vukmirović	Dynamics of Photoexcited Charges in Organic Heterojunctions – Insights from Theory and Simulation
Neophytos Neophytou	Simulation studies of nanostructured thermoelectric materials
Jose D Querales-Flores	Electron-phonon coupling and thermoelectric transport in n-type PbTe
Zlatan Aksamija	Improving thermoelectric power factor in 2D single-layer MoS2 using periodic potentials

Track 4. Multi-scale Simulation III

Speaker	Paper Title
Francesc Viñes	CO₂ Capture and Conversion Using Transition Metal Carbide Systems
Michail Stamatkis	Bridging the Scales from the Molecule to the Reactor: Tackling the Accuracy-Efficiency Dillema
Stephen Rhatigan	CO ₂ and Water Activation on Ceria Nanocluster-Modified TiO ₂ rutile (110)
Rodolfo Araneo	Towards a full model of non-linear piezoelectricity in ZnO nanowires

Track 4. Multi-scale Simulation IV

Speaker	Paper Title
Milan Pesic	Modeling framework linking materials to devices: From physical mechanisms to emerging memory and device engineering
Patrick Sit	Ab initio study of the degradation of the hybrid inorganic-organic lead halide perovskite
Fabio Sacconi	Multiscale simulation of nanostructured devices
Ali Al Adawi	Design and Simulation of Plasmonics-Based Structures

Track 5. Nanofabrication & Assembly: Nanostructures for Photonics

Speaker	Paper Title
Randy Fechner	A Shape Memory Alloy 1x2 Optical Waveguide Switch
Dimitars Jevtics	Precise Positioning and Orientation of Nanowire Lasers in Regular and Diffractive Surfaces
Xin Li	Nanoplasmonic enhancement of semiconductor quantum emitters
Anuj Dhawan	Plasmonic nanostructures on tips of tapered optical fibers for large EM enhancement
Srinivasu Puttaswamy	Hydrogel as a Nerve Guide and Biocompatible Glue for Neural Applications
Changyu Hu	Tunable optical buffer through an analogue to Electro-magnetically Induced Transparency in coupled Photonic Crystal cavities

Track 5. Nanofabrication & Assembly: Nanofabrication and Lithography	
Speaker	Paper Title
Hao Jiang	Customized nanomanufacturing of structural color images using inkjet on nanostructured foils
Maximilian Speckbacher	Directed Self-assembly of Silicon Nanocubes Fabricated by Nano Imprint-Lithography
Rameez Ahmad	Pushing the limits of micro/nano 3D fabrication
Maab Al-hafidh	Micromirror angle dependence with etchant choice on <100> silicon via wet etching
Zhankun Weng	Effect of Gas Block on Removed Irregular Pore Layer for Porous InP By Chemical Etching
Wei-chuan Shih	Holographic Microbubble Tweezers for Particle Manipulation and Assembly in Biomedical Applications
Track 6. Nanoacoustics I	
Speaker	Paper Title
Puxiang Lai	Ultrasound-mediated high-resolution optical focusing and imaging in optically scattering media
James B Spicer	Photoacoustic Generation in Polymer Matrix Nanocomposite Films
Xiaoning Jiang	A Fiber Optic Laser Ultrasound Transducer using Candle Soot Nanoparticles/PDMS Composites
Lidai Wang	Multiscale Functional Photoacoustic Imaging
Track 6. Nanoacoustics II	
Speaker	Paper Title
Oluwaseyi Balogun	Detection of Gigahertz Nanomechanical Vibrations with Localized Gap Plasmons in a Pillar Nanoantenna Architecture
Gabriele Ferrini	Nano-acoustic fingerprint
Hannah Johnston	Effect of Ultrasonication on attachment kinetics of biological material in proximity of gold nanowire arrays
Track 7. Nanophononics I	
Speaker	Paper Title
Masahiro Nomura	Heat conduction control in Si membrane by phononic nanostructures
Olivier Bourgeois	Heat conduction in a ballistic 1D phonon waveguide: no quantization of the thermal conductance
Bartłomiej Graczykowski	Phononic Crystal Membranes: Contactless thermal and acoustic characterization
Track 7. Nanophononics II	
Speaker	Paper Title
Jouni Ahopelto	Silicon Membranes for Nanophononics
Davide Donadio	Thermal transport in finite-size van der Waals materials: Modeling and Simulations
Djordje Dangic	Negative Thermal Expansion of GeTe near the Ferroelectric Phase Transition from First Principles

Track 7. Nanophononics III	
Emigdio Chavez-Angel	On the enhancement of the thermal conductivity of graphene-based nanofluids
Jerome Saint Martin	Thermoelectric properties of Quantum Dot-based devices
P-Olivier Chapuis	Phonon heat conduction in phononic-crystal membranes
Milo Swinkels	Thermal rectification
Track 8 Nanomagnetism and Spintronics	
Speaker	Paper Title
Joshua Mehta	Advances in the synthesis and long-term protection of zero-valent iron nanoparticles
Zhaohao Wang	A spin orbit torque based true random number generator with real-time optimization
Katarzyna Siewierska	Fermi Level Engineering of Mn ₂ Ru _x Ga thin films
Jörg Fusenig	Motion of Magnetic Nanofluids in an External Magnetic Field in Media of Different Viscosity
Track 10. Nanosafety	
Speaker	Paper Title
Dimiter Prodanov	Generic assessment of novel risks related to the use of engineered nanomaterials
Irini Furxhi	Predicting Nanomaterials toxicity pathways based on Toxicogenomics studies using Bayesian networks.
Track 12. Nanoscale & Biological Communication	
Speaker	Paper Title
Arman Ahnood	Optically excitable nanoscaled voltage sources for neuronal modulation
Andrew Eckford	Impact of Choices of Measurement in RSK based Molecular Communication System
Vihar Georgiev	A multi-scale simulation study for optimization and variability evaluation of molecular based flash cell
Hamideh Ramezani	Performance Analysis for Capacitive Electrical Neural Interfaces
Hung-Yi Lo	Interference Modeling for Diffusion-Based Molecular Communication with Receptor Antagonist
Tao Sun	Cellular Self-assembly with Magnetic Microfibers Incorporation for Construction of Tissue Micro-rings