Curriculum Vitae

ALEXANDER A. BALANDIN

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Biographical Sketch

Alexander A. Balandin received his BS and MS degrees *Summa Cum Laude* in Applied Mathematics and Applied Physics from the Moscow Institute of Physics and Technology (MIPT), Russia. He received his second MS degree and PhD degree in Electrical Engineering from the University of Notre Dame, USA. From 1997 to 1999, he worked as a Research Engineer at the Department of Electrical Engineering, UCLA. In 1999 he joined UCR, where he is presently a Distinguished Professor of Electrical and Computer Engineering, the University of California Presidential Chair Professor of Materials Science, Director of the Phonon Optimized Engineered Materials (POEM) Center, Director of UCR Nanofabrication Facility, and Associate Director of the DOE EFRC Spins and Heat in Nanoscale Electronic Systems (SHINES) Center. Professor Balandin is a Founding Chair of the UCR campus-wide Materials Science and Engineering (MS&E) Program. His research expertise covers a wide range of nanotechnology, materials science, electronics, phononics and spintronics fields. He is recognized as a pioneer of the graphene thermal field who discovered experimentally and explained theoretically unique heat conduction properties of graphene, and developed graphene technologies for thermal management. His many research achievements include development of the phonon engineering approaches for nanoscale devices, the first demonstration of the charge-density-wave electronic devices operating at room temperature, electronic noise reduction in wide-band-gap-semiconductor electronics. His current research interests include charge-density-wave effects in low-dimensional materials and their device applications, electronic noise in materials and devices, Brillouin – Mandelstam – Raman spectroscopy of various materials, phonon thermal transport at nanoscale, practical applications of graphene in thermal management and energy conversion, emerging device technologies. Professor Balandin is a recipient of The MRS Medal from the Materials Research Society, The Brillouin Medal from the International Phononics Society and the Pioneer of Nanotechnology Award from IEEE Society for his graphene, phononics and nanotechnology research. He is an elected Fellow of eight professional societies: MRS, APS, IEEE, OSA, SPIE, IOP, IOM3 and AAAS; is among the Clarivate Analytics and Thomson Reuters Highly Cited Researchers (Physics and Cross-Discipline); and serves as Deputy Editor-in-Chief of the Applied Physics Letters.

For more information, visit his group web-site: http://balandingroup.ucr.edu/

ALEXANDER A. BALANDIN

University of California Presidential Chair Professor
Distinguished Professor, Department of Electrical and Computer Engineering
Director, UC Riverside Nanofabrication Facility (NanoFab)
Director, Phonon Optimized Engineered Materials (POEM) Center
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EDUCATION AND PROFESSIONAL PREPARATION

- Postdoctoral Research, University of California - Los Angeles, USA, 1997 – 1999
- Ph.D. in Electrical Engineering, University of Notre Dame, Notre Dame, USA, 1996
- M.S. in Electrical Engineering, University of Notre Dame, Notre Dame, USA, 1995
- M.S. in Applied Physics, Moscow Institute of Physics and Technology, Russia, 1991
- B.S. in Mathematics, Moscow Institute of Physics and Technology, Russia, 1989

RESEARCH INTERESTS

Advanced materials for applications in electronics and energy conversion; emerging devices, spintronics, quantum computing and alternative computational paradigms; Raman and Brillouin spectroscopy; graphene and low-dimensional van der Waals materials; phonon engineering and thermal transport; low-frequency electronic noise in materials and devices; electronic noise spectroscopy

EMPLOYMENT HISTORY

- Director (2018 – present), UCR Nanofabrication Facility (NanoFab), University of California, Riverside, California, USA
- Interim Director (2016 – 2018), UCR Nanofabrication Facility (NanoFab), University of California, Riverside, California, USA
- Distinguished Professor (2016 – present), Department of Electrical and Computer Engineering, University of California, Riverside, California, USA
- University of California Presidential Chair Professor (2013 – present), Department of Electrical and Computer Engineering, University of California, Riverside, California, USA
- Founding Chair (2006 – 2011), Materials Science and Engineering Program, University of California, Riverside, California, USA
- Visiting Professor (2005 – 2006), Department of Engineering, University of Cambridge, Cambridge, United Kingdom

- Professor (2005 – 2016), Department of Electrical and Computer Engineering, University of California, Riverside, California, USA
- Associate Professor (2001 – 2005), Assistant Professor (1999 – 2001), Department of Electrical Engineering, University of California, Riverside, California, USA
- Research Engineer (1997 – 1999), Electrical Engineering Department, University of California, Los Angeles, California, USA
- Research Associate (1996 – 1997), Department of Electrical Engineering, University of Nebraska, Lincoln, Nebraska, USA
- Teaching and Research Assistant (1993 – 1996), Department of Electrical Engineering, University of Notre Dame, Indiana, USA
- Research Assistant (1991 – 1993), Moscow Institute of Physics and Technology (MIPT) and the Russian Space Agency, Dolgoprudny, Moscow region, Russia

AWARDS AND RECOGNITIONS

- Clarivate Analytics and Thomson Reuters Highly Cited Researcher, 2015 – present
- ***The Brillouin Medal*** – International Phononics Society (IPS), 2019
  "For discovery of unique phonon properties of graphene, and contributions to the development of graphene thermal management applications."
- Deputy Editor-in-Chief, Applied Physics Letters (APL), 2016 – present
- Fellow of MRS – The Materials Research Society, 2014
- ***The MRS Medal*** – The Materials Research Society, 2013
  "For discovery of the extraordinary high intrinsic thermal conductivity of graphene, development of an original optothermal measurement technique for investigation of thermal properties of graphene, and theoretical explanation of the unique features of the phonon transport in graphene"
- Fellow of IEEE – The Institute of Electrical and Electronics Engineering, 2013
- Fellow of APS – The American Physical Society, 2012
- Fellow of IOM3 – The Institute of Materials, Minerals and Mining, U.K., 2012
- Fellow of IOP – The Institute of Physics, U.K., 2012
- ***The Pioneer of Nanotechnology Award*** – IEEE, 2011
  "For pioneering contributions to nanoscale phonon transport with applications in nanodevices, graphene devices, thermoelectric and thermal management of advanced electronics."
- Fellow of SPIE - The International Society for Optical Engineering, 2011
- Fellow of OSA - The Optical Society of America, 2011
- Invited Lecturer, IEEE Chapter, California, USA, 2010
- Semiconductor Research Corporation (SRC) Inventor Award, USA, 2009, 2010
- Distinguished Visiting Professor, Astrakhan State University, Russia, 2009
- Fellow of AAAS - The American Association for Advancement of Science, 2007
- Distinguished IEEE Lecturer, University of Texas, Arlington, USA, 2006
- Distinguished Lecturer, CNRS, Pierre and Marie Curie Institute, Paris, France, 2005
- Visiting Professor of Engineering, University of Cambridge, UK, 2005

- Visiting Fellow, Pembroke College, University of Cambridge, UK, 2005
- Office of Naval Research (ONR) Young Investigator Award, Arlington, USA, 2002
- National Science Foundation (NSF) Faculty CAREER Award, 2001
- University of California Regents Faculty Award, USA, 2000
- US Civil Research and Development Foundation (CRDF) Award, Arlington, USA, 1999
- Merrill Lynch Innovative Engineering Research Award, WTC, New York, USA, 1998
- Who's Who in Science and Engineering, Editions 1997 – present
- Outstanding Teaching Assistant Award, University of Notre Dame, USA, 1996
- Elected Member, *Eta Kappa Nu* Engineering Honor Society, 1994
- Yong Scientist Award, A. Popov Radio Society Conference, Moscow, Russia, 1992
- *Summa Cum Laude*, Moscow Institute of Physics and Technology, Russia, 1991

PLENARY LECTURES, KEYNOTE AND INVITED CONFERENCE TALKS

- Invited Talk "Monitoring and controlling charge-density-waves in 2D materials," American Physical Society (APS) March Meeting, Denver, Colorado, USA, 2020 – due to COVID-19 delivered virtually
- Plenary Lecture, "Low-frequency noise in low-dimensional van der Waals materials: The charge-density-wave effects, unusual Lorentsians and more," 5th International Conference on Noise and Fluctuations (ICNF), Neuchâtel, Switzerland, 2019
- Plenary Lecture, "Brillouin spectroscopy of confined phonons," The 5th International Conference on Phononic Crystals, Metamaterials, Phonon Transport, and Topological Phononics (Phononics 2019), Tucson, Arizona, USA, 2019
- Plenary Lecture, "Phonons and thermal transport in graphene," The 5th International Conference on Phononic Crystals, Metamaterials, Phonon Transport, and Topological Phononics (Phononics 2019), Tucson, Arizona, USA, 2019 – *The Brillouin Medal Talk*
- Invited Talk, "Two-dimensional charge-density-wave materials: Unique properties and potential applications," Symposium—2D Materials—Tunable Physical Properties, Heterostructures and Device Applications, Materials Research Society (MRS) Spring Meeting, Phoenix, Arizona, USA, 2019
- Invited Talk, "Van der Waals bonded materials: From quasi-2D to quasi-1D," American Physical Society (APS) March Meeting, Los Angeles, California, 2018
- Invited Talk "Transition from quasi-2D to quasi-1D van der Waals materials: Electronic properties of monoclinic $TaSe_3$ capped with BN layers", Materials Research Society (MRS) Spring Meeting, Phoenix, Arizona, USA, 2017
- Invited Talk "Properties and device applications of two-dimensional charge density wave materials", Materials Research Society (MRS) Spring Meeting, Phoenix, Arizona, USA, 2017
- Invited Talk, "2D and 1D van der Waals materials and devices," Robert C. Haddon Memorial Symposium, University of California, Riverside, California, USA, 2017
- Invited Talk, "Phonons and magnons in NiO," Workshop of the DOE Center Spins and Heat in Nanoscale Electronic Systems (SHINES), Palm Desert, California, USA 2017
- Keynote Talk, "Graphene thermal management technologies: State-of-the-art and future prospects," Graphene World Summit, San Diego, California, USA, 2016

- Invited Talk, "Direct observation of the acoustic phonon spectrum modification in individual free-standing semiconductor nanowires," Workshop on Innovative Nanoscale Devices and Systems (WINDS), Kona, Big Island, Hawaii, USA, 2016
- Invited Talk, "Thin film transistors with 2D materials for selective gas sensing," Semiconductor Technology for Ultra Large-Scale Integrated Circuits and Thin Film Transistors - V (ULSI-TFT), Lake Tahoe, California, USA, 2015
- Invited Talk, "Graphene based thermal coatings," The International Conference on Metallurgical Coatings and Thin Films (ICMCTF) – Symposium on 2D Materials, San Diego, USA, 2015
- Invited Talk, "Graphene heat spreaders and interconnects for advanced electronics," Semiconductor Technology for Ultra Large-Scale Integrated Circuits and Thin Film Transistors - V (ULSI-TFT), Lake Tahoe, California, USA, 2015
- Invited Talk, "Low-frequency current fluctuations and 1/f noise in graphene," Graphene Week, Gothenburg, Sweden, 2014
- Invited Talk, "Graphene chemical and gas sensors," CIMTEC 2014 - 13th International Conference on Modern Materials and Technologies - 6th Forum on New Materials, Montecatini Terme, Florence, Italy, 2014
- Invited Talk, "Graphene applications in thermal interface material," Fifteenth International Conference on the Science and Applications of Nanotubes, University of Southern California, Los Angeles, USA, 2014
- Invited Talk, "1/f Noise in graphene devices," Fifteenth International Conference on the Science and Applications of Nanotubes, University of Southern California, Los Angeles, USA, 2014
- Plenary Lecture, "Phonons in Graphene and van der Waals Materials" Materials Research Society (MRS) Fall Meeting, Boston, USA, 2013 – *The MRS Medal Talk*
- Keynote Conference Opening Talk, "Phononics in low-dimensional materials," International CECAM Workshop Nanophononics, University of Bremen, Germany, 2013
- Plenary Conference Opening Talk, "Thermal properties of graphene and applications in energy management," Advancements in Thermal Management, Denver, USA, 2013
- Invited Talk, "Graphene applications for thermal management of Li-ion batteries," 5th Symposium on Graphene, Ge/III-V, and Emerging Materials for Post-CMOS Applications, Electrochemical Society (ECS), Toronto, Canada, 2013
- Keynote Invited Lecture, "Thermal properties of graphene: applications in thermal management," PHONONS 2012, University of Michigan, Ann Arbor, USA, 2012
- Plenary Lecture, "Properties and applications of graphene," IEEE NANO – 11th International Conference on Nanotechnology, Portland, Oregon, USA, 2011
- Plenary Lecture, "Nanoscale phonon engineering," PHONONICS – International Conference on Phononic Crystals, Metamaterials and Optomechanics, Santa Fe, New Mexico, USA, 2011
- Invited Talk, "Phonon transport in graphene," The International Conference on the Science and Applications of Nanotubes, University of Cambridge, Cambridge, UK, 2011
- Keynote Talk, "Graphene applications for thermal management," Graphene: Road to Applications, Nature Publishing Group Conference, Boston, USA, 2011

- Invited Tutorial Talk, "Thermal conductivity of graphene: Prospects of thermal management applications," Semi-Therm Conference, San Jose, USA, 2011
- Invited Talk, "Electrical and noise characteristics of graphene transistors and sensors," SPIE Smart Structures Conference, San Diego, USA, 2011
- Invited Talk, "Graphene applications in thermal interface materials," 3rd Symposium on Graphene and Emerging Materials for Post-CMOS Applications, Electrochemical Society (ECS), Montreal, Canada, 2011
- Keynote Lecture, "Thermal properties of graphene," Graphene 2011 Conference – Imagine Nano, Bilbao, Spain, 2011 – the largest European event in Nanoscience and Nanotech
- Invited Lecture, "Phonon and thermal properties of graphene," International Winter School on Electronic Properties of Novel Materials (IWEPNM), Tirol, Austria, 2011
- Invited Talk, "Phonon transport in graphene materials and devices," Symposium on Nanoscale Heat Transport – From Fundamentals to Devices, Materials Research Society (MRS) Spring Meeting, San Francisco, California, USA, 2011
- Invited Talk, "Phonon engineering with graphene," Massachusetts Institute of Technology Japan – U.S. Joint Seminar on Nanoscale Transport Phenomena, Tokyo, Japan, 2011
- Invited Talk, "Graphene applications in interconnects and heat spreaders," International Conference on Solid State Devices and Materials (SSDM), The University of Tokyo, Tokyo, Japan, 2010
- Keynote Lecture, "Phonon engineering: From nanowires and quantum dots to graphene and topological insulators," ICREA Workshop on Phonon Engineering, St Feliux de Guixol, Barcelona, Spain, 2010
- Invited Talk, "Graphene-like" exfoliation of atomically-thin films of Bi_2Te_3 and related materials: Applications in thermoelectrics and topological Insulators," Symposium on Compound Semiconductors, Electrochemical Society (ECS), Las Vegas, USA, 2010
- Invited Talk, "New carbon materials for thermal management," SRC Carbon Based Electronics Workshop, University of Albany – SUNY, Albany, New York, USA, 2010
- Keynote Lecture, "Thermal conductivity of graphene and carbon materials," International Workshop on Nanocarbon Photonics and Optoelectronics, North Karelia, Finland, 2010
- Invited Talk, "Extraordinary thermal conductivity of graphene: Applications in thermal management," 2nd Symposium on Graphene and Emerging Materials for Post-CMOS Applications, Electrochemical Society (ECS), Vancouver, Canada, 2010
- Invited Talk, "Properties of mechanically exfoliated atomically-thin films of bismuth telluride," Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI), Santa Fe, New Mexico, USA, 2010
- Invited Session Opening Talk, "Phonon transport in graphene," Session on Thermal Properties of Graphene, Symposium on Graphene Materials and Devices, Materials Research Society (MRS) Spring Meeting, San Francisco, California, USA, 2010
- Invited Lecture on Nanotechnology, "New materials for thermal management," The Applied Power Electronics Conference and Exposition (APEC) and Inaugural Public Nanotechnology Initiative, Palm Springs, California, USA, 2010

- Keynote Lecture, "Graphene properties and possible micro- and nano-device applications," NATO Advanced Research Workshop (ARW) on Advanced Materials and Technologies for Micro/Nano-Devices, Sensors and Actuators, St. Petersburg, Russia, 2009
- Keynote Opening Lecture, "Thermal conductivity of graphene," Joint Session of The 30th International Thermal Conductivity Conference (ITCC) and The 18th International Thermal Expansion Symposium (ITES), Seven Springs Mountain Resort, Pennsylvania, USA, 2009
- Plenary Lecture, "Thermal conductivity of graphene," 9th Biennial International Conference on Fullerenes and Atomic Clusters, The Russian Academy of Sciences (RAS) and The Russian Foundation for Basic Research (RFBR), St. Petersburg, Russia, 2009
- Invited Session Opening Talk, "Phonon engineering with graphene and graphene multi-layers," Session on Phonon Transport in Nanostructures, Symposium on Phonon Engineering for Enhanced Materials Solutions, Materials Research Society (MRS) Fall Meeting, Boston, Massachusetts, USA, 2009
- Invited Lecture, "Thermal conductivity of graphene," The Graphene Week Conference, The European Science Foundation (ESF), Obergurgl, Austria, 2009
- Keynote Opening Lecture, "Graphene properties and possible device applications," The International Symposium on Graphene Devices: Technology, Physics, and Modeling (ISGD), Aizu-Wakamatsu, Japan, 2008
- Keynote Talk, "Development of the high-efficiency nanostructure-based solar cells," UC-Riverside – Tohoku University Tech Horizons Conference, Riverside, California, USA, 2008
- Invited Symposium Opening Talk, "Nanoscale phonon engineering: From nanowire transistors to graphene devices," Symposium on Phonon Engineering - Theory and Applications, Materials Research Society (MRS) Fall Meeting, Boston, Massachusetts, USA, 2007
- Invited Talk, "Extremely high thermal conductivity of graphene," Zing Nanomaterials Conference, Playa del Carmen, Cancun, Mexico, 2008
- Keynote Lecture, "Carrier transport in quantum dot superlattices: Applications in solar cells and thermoelectric," The Aerospace Corporation – NASA Space Power Workshop (SPW), Los Angeles, California, USA, 2007
- Invited Talk, "Phonons in semiconductor quantum dot materials," Symposium on Quantum Dot Physics and Materials, The International Society for Optical Engineers (SPIE) Optoelectronics: Quantum Dots and Nanoclusters, San Jose, California, USA, 2007
- Invited Talk, "Optimization of electron and phonon transport in quantum dot superlattices for thermoelectric applications," The 2nd International Energy Nanotechnology Conference, American Society of Mechanical Engineers (ASME), Santa Clara, California, USA, 2007
- Invited Talk, "Phonon engineering in nanowires with the acoustically mismatched barrier shells," Symposium on Nanoscale Heat Transport - From Fundamentals to Devices, Materials Research Society (MRS) Spring Meeting, San Francisco, California, USA, 2007
- Invited Talk, "Phonons and phonon engineering in nanostructures: From nanowire transistors to graphene devices," Virtual Conference on Nanoscale Science and Technology (VC-NST), Fayetteville, Arkansas, USA, 2007
- Invited Talk, "Modeling-based optimization of the quantum dot solar cells," UC-Riverside Tech Horizons Conference, Riverside, California, USA, 2007

- Keynote Lecture, "Solar cell nanotechnology for improved efficiency and radiation hardness," Symposium on Photonics for Space Environments, The International Society for Optical Engineering (SPIE), San Diego, California, USA, 2006
- Invited Talk, "Phonon engineering in semiconductor nanowires and quantum dot superlattices," Workshop on Nano-Technology and Information for Space Applications, The 2nd IEEE – NASA International Conference on Space Mission Challenges for Information Technology, Pasadena, California, USA, 2006
- Invited Talk, "Phonons in Si nanowires and Si/SiGe quantum dot superlattices," IEEE Silicon Nanoelectronics Workshop, Honolulu, Hawaii, USA, 2006
- Keynote Lecture, "Phonon engineering in nano-devices and virus-based nano-templates," Symposium on Noise and Information in Nanoelectronics, Sensors and Standards, The International Society for Optical Engineering (SPIE), Austin, Texas, USA, 2005
- Plenary Lecture, International Conference on Phonon Scattering in Condensed Matter Physics – The 11th PHONONS Conference, St. Petersburg, Russia, 2004
- Invited Talk, "Computational modeling of electron - phonon spectra in semiconductor quantum dot arrays," The 3rd International Conference on Computational Modeling and Simulation of Materials (SIMTEC), Acireale, Sicily, Italy, 2004
- Invited Talk, "Carrier and phonon spectrum in quantum dot superlattices for optoelectronic and thermoelectric applications," Nanotechnology Conference and Trade Show (NanoTech), San Francisco, California, USA, 2003
- Plenary Lecture, "Investigation of low-frequency noise in heterostructure field-effect transistors based on wide band gap semiconductors," The 16th International Conference on Noise in Physical Systems and 1/f Fluctuations (ICNF), Gainesville, Florida, USA, 2001
- Plenary Talk, "1/f Noise in GaN devices," The 7th Van der Ziel Symposium on Quantum 1/f Noise and Other Low Frequency Fluctuations in Electronic Devices, American Institute of Physics (AIP) Conference Series, St. Louis, Missouri, USA, 1999

INVITED UNIVERSITY SEMINARS AND COLLOQUIA

- Invited Speaker, "Quasi-1D van der Waals materials," Kickoff Meeting for Collaborative NSF DMREF Project, Stanford University, California, USA, 2020
- Invited Colloquium Speaker, "Unique heat conduction properties of graphene: From fancy physics of phonon transport to applications in thermal management," Department of Mechanical and Aerospace Engineering, University of California, Los Angeles, USA, 2019
- Invited Colloquium Speaker, "Thermal properties of graphene: Applications in thermal management of advanced electronics," Department of Mechanical and Aerospace Engineering, University of California, Irvine, USA, 2019
- Invited Colloquium Speaker, "Quasi-2D and quasi-1D van der Waals materials and devices," Condensed Matter Seminar Series, Department of Physics, University of California, Santa Cruz, USA, 2018
- Invited Colloquium Speaker, "Quasi-1D van der Walls nanowires: Prospects of interconnect applications," Department of Electrical Engineering, University of California, Irvine, USA, 2018

- Invited Colloquium Speaker, "Two-dimensional charge-density-wave devices operating at room temperature," California Institute of Technology, Pasadena, California, USA, 2017
- Invited Colloquium Speaker, "Properties and applications of two-dimensional materials," Graphene Institute Lecture Series, University of Cambridge, Cambridge, U.K.
- Invited Colloquium Speaker, "Phonon transport in graphene: Applications in thermal management," California Institute of Technology, Pasadena, California, USA, 2016
- Distinguished Colloquium Speaker, "Two-dimensional materials: From fancy physics to cool applications," University of Southern California, Los Angeles, California, USA, 2015
- Invited Colloquium Speaker, "Two-dimensional materials: From physics to applications," Department of Electrical and Computer Engineering, University of Texas – Austin, Texas, USA, 2015
- Invited Speaker, "Thermal properties and applications of graphene," Chalmers Institute of Technology, Gothenburg, Sweden, 2014
- Invited Colloquium Speaker, "Phonon engineering in nanostructures and graphene," Department of Mechanical Engineering, University of California, San Diego, California, USA, 2014
- Invited Speaker, "Phonon transport in graphene: Applications in thermal management," Skoltech Colloquium Series, Skolkovo Institute of Technology, Moscow, Russia, 2014
- Invited Colloquium Speaker, "Two-dimensional materials: Physical properties and practical applications," Department of Electrical Engineering, University of Houston, Texas, USA, 2013
- Invites Colloquium Speaker, "Graphene devices: Heat and noise," Materials Science Colloquium, California Institute of Technology, Pasadena, California, USA, 2012
- Invited Colloquium Speaker, "Thermal effects in graphene," Mechanical Engineering Colloquium, University of California – Berkeley, Berkeley, California, USA, 2012
- Invited Colloquium Speaker, "Noise and heat in graphene devices," Electrical Engineering Colloquium, University of Notre Dame, Notre Dame, Indiana, USA, 2012
- Invited Lecture, "Graphene: properties and device applications," Institute of Science and Technology, Vienna, Austria, 2011
- Invited Colloquium Speaker, "Properties and applications of graphene," Physical Chemistry Colloquium, California Institute of Technology, Pasadena, California, USA, 2010
- Distinguished Lecturer, "Overview of carbon materials and their properties: From diamond to graphene," Astrakhan State University, Astrakhan, Russia, 2010
- Invited Colloquium Speaker, "Two-dimensional phonon transport in graphene," Helsinki University of Technology, Helsinki, Finland, 2009
- Invited Colloquium Speaker, "Raman metrology of graphene", Department of Materials Science and Engineering, University of California, Los Angeles, California, USA, 2008
- Invited Speaker, "Nanostructured solar cells," Tohoku University, Sendai, Japan, 2007
- Invited Colloquium Speaker, "Semiconductor nanostructures: Properties and applications for the direct energy conversion," Department of Mechanical Engineering, University of California, Riverside, California, 2007
- Invited Speaker, "Properties of semiconductor quantum dot superlattices," Department of Semiconductor Physics, Moscow State University, Moscow, Russia, 2006

- Distinguished Lecturer, "Nanoscale phonon engineering: From concepts to devices applications," University of Texas – Arlington, Texas, USA, 2006
- Distinguished Lecturer, "Nanoscale phonon engineering: Fundamentals and applications," General Physics Institute of the Russian Academy of Sciences, Moscow, Russia, 2006
- Invited Colloquium Speaker, "GaN materials and devices: Traps, noise and heat," Department of Engineering, University of Cambridge, Cambridge, UK, 2005
- Distinguished Lecturer, "Phonon engineering at nanoscale," Pierre and Marie Curie Institute, CNRS, Paris, France, 2005
- Invited Colloquium Speaker, "Phonon engineering in acoustically mismatched nanowires," Department of Physics, University of Southern California, Los Angeles, California, 2005
- Invited Colloquium Speaker, "Phonon engineering in nanoscale devices," Department of Electrical Engineering, University of California, San Diego, California, 2004
- Invited Colloquium Speaker, "Phonon engineering: Physics and applications," Department of Physics, University of California, Irvine, California, 2004
- Invited Colloquium Speaker, "Low-frequency noise in GaN HFETs," Department of Electrical Engineering, University of Texas – Austin, Austin, Texas, 1999
- Invited Colloquium Speaker, "Noise in GaN transistors," Department of Electrical Engineering, University of South Carolina, Columbia, South Carolina, 1998

INVITED TALKS AT GOVERNMENT ORGANIZATIONS AND INDUSTRY

- "Thermal management with graphene," Evonik Corporation, New Jersey, USA, 2020
- "Fabrication and testing of quasi-1D van der Waals metal interconnects," Global Research Collaboration (GRC) Workshop, Semiconductor Research Corporation (SRC), USA, 2019
- "The noise of magnons," Center on Spins and Heat in Nanoscale Electronic Systems (SHINES) Workshop, Riverside, California, USA 2019
- "Thermal interface materials with graphene," Samsung, Irvine, California, USA, 2019
- "Charge-density-wave effects in van der Walls materials," Project Review and Workshop, Center for Integrated Nanotechnologies (CINT), Sandia National Laboratories – Los Alamos National Laboratory, Albuquerque, New Mexico, USA, 2018
- "Novel switching phenomena in 2D materials," National Science Foundation (NSF) Program Review and Workshop for 2-DARE and New-LAW EFRI, Sand Diego, California, USA 2018
- "Spin-phonon coupling in NiO," Department of Energy (DOE) Program Review and Workshop, Center on Spins and Heat in Nanoscale Electronic Systems (SHINES), Sand Diego, California, USA 2018
- "2D and 1D van der Waals materials," National Science Foundation (NSF) Program Review and Workshop for 2-DARE and New-LAW EFRI, Penn State University, State College, Pennsylvania, USA 2017
- "UV Raman spectroscopy of NiO," Department of Energy (DOE) Program Review and Workshop, Center on Spins and Heat in Nanoscale Electronic Systems (SHINES), Riverside, California, USA 2017

- "Nanoscale phonon – magnon engineering and thermal transport," Department of Energy (DOE) Program Review and Workshop, Washington, DC, USA, 2016
- "Graphene and 2D materials applications in thermal management and sensors," Northrop Grumman Nanotechnology Workshop, Northrop Grumman, Redondo Beach, California, USA, 2015
- "Graphene enhanced thermal interface materials," Henkel, Irvine, California, USA, 2015
- "Heat and noise van-der-Waals-materials and devices," DARPA – SRC Center for Function Accelerated nano-Material Engineering (FAME), Los Angeles, California, USA, 2015
- "Graphene applications in thermal management technologies," Bourns Inc., Riverside, California, USA, 2014
- "Electronic noise in van-der-Waals-materials devices," DARPA – SRC Center for Function Accelerated nano-Material Engineering (FAME), Los Angeles, California, USA, 2013
- "Energy conversion in Van-der-Waals-materials," DARPA – SRC Center for Function Accelerated nano-Material Engineering (FAME), UCLA, Los Angeles, California, USA, 2013
- "Low-noise topological insulator and graphene devices," DARPA – SRC FCRP Program Review and Workshop, MIT, Boston, Massachusetts, USA, 2011
- "Graphene-like" exfoliated topological insulators: Optical, electrical and thermal characterization," DARPA Workshop on Topological Insulators, UCLA, Los Angeles, California, USA, 2010
- "Graphene heat spreaders and composite substrates for improved thermal management," Interconnect Focus Center (IFC) Seminar Series, Semiconductor Research Corporation (SRC) and Georgia Institute of Technology, Atlanta, Georgia, 2010
- "Phonon and thermal nano-engineering," SRC – DARPA Functional Engineered Nano Architectonics Workshop, Los Angeles, California, USA, 2010
- "Overview of DoD funded solar power research at NDL" South California Research Institute for Solar Energy (SC-RISE), Riverside, USA, 2010
- "Phonon engineering: Innovative approaches for the electron mobility enhancement at nanoscale," AFOSR Joint Electronics Program Review and Workshop, US Air Force Office of Scientific Research (AFOSR), Arlington, Virginia, USA, 2009
- "Highlights of graphene electronics research," Intel – SRC – DARPA Advanced Electronics Workshop, Intel Corporation, Portland, Oregon, 2008
- "Carbon materials for thermal management," SRC – DARPA Functional Engineered Nano Architectonics Workshop, San Diego, California, 2008
- "Acoustic phonon engineering in semiconductor nanostructures," DARPA Workshop on Nanoscale Phonon Engineering (NOPE), Arlington, Virginia, USA 2005
- "Phonon engineering: From concept to device applications," NSF Workshop on Silicon Nanoelectronics and Beyond, Arlington, Virginia, USA 2005
- "Micro-Raman characterization of stress/strain in semiconductors," Raytheon Vision Systems (RVS), Goleta, California, USA, 2005
- "Nanoscale phonon engineering," Superconducting Electronics Workshop and Program Review, Office of Naval Research (ONR), Red Bank, New Jersey, USA, 2005
- "Nanophononics: Concept and device applications," California Nanosystems Institute (CNSI), UCLA, Los Angeles, California, USA, 2005

- "Thermal conductivity of AlGaN materials: Implications for high-power electronics," NASA Jet Propulsion Laboratory (JPL), Pasadena, California, USA, 2004
- "Thermal properties of GaN films and AlGaN alloys," Office of Naval Research Workshop on Advanced Materials, Tampa, Florida, USA, 2004
- "Phonon engineering for enhancement of device operation," Workshop on Novel Device Concepts, Naval Postgraduate School, Monterey, California, USA, 2003
- "Phonon confinement effects in nanowires," Ames Research Center, National Aeronautics and Space Administration (NASA), Moffett Field, USA, 2002

HIGHLIGHTS OF FUNDED RESEARCH PROJECTS

- PI ($$497,455, single PI): DOE DE-SC0021020; 08/15/2020 – 08/14/2023; Physical Mechanisms and Electric-Bias Control of Phase Transitions in Quasi-2D Charge-Density-Wave Quantum Materials
- PI ($741,000 total for two co-PIs): NSF 2019056; 10/01/2020 – 09/30/2022; Major Research Instrumentation (MRI): Development of a Cryogenic Integrated Micro-Raman-Brillouin-Mandelstam Spectrometer
- PI ($1,120,000 total award for two UCR co-PIs; collaboration with Stanford University, which has its own $600,000 budget): NSF; 09/01/2019 – 08/31/2022; Designing Materials to Revolutionize and Engineer our Future (DMREF) Program entitled Collaborative Research: Data Driven Discovery of Synthesis Pathways and Distinguishing Electronic Phenomena of 1D van der Waals Bonded Solids
- PI ($1,850,000, total award): NSF 1433395; 11/01/2014 - 10/31/2019 (with Supplemental Funding); EFRI 2-DARE: Novel Switching Phenomena in Atomic Heterostructures for Multifunctional Applications
- PI ($150,000, single PI): DARPA W911NF18-1-0041; 12/15/2017 –06/30/2019; Phonon Engineered Materials for Fine-Tuning the G-R Center and Auger Recombination
- PI ($50,000): UCR Office of Technology Transfer; 01/01/2019 – 12/30/2020; Graphene Thermal Management Technologies
- Co-PI (~$400,000, my share): DOE SC0012670; 08/01/18 - 07/31/20; EFRI Center Spin and Heat in Nanoscale Electronic Systems (SHINES) – Lead Organization: UCR; Extension Project: Raman and Brillouin Spectroscopy of Antiferromagnetic Materials
- PI ($264,000, total award): SRC NM-2796; 01/01/2018 – 12/30/2010; One-Dimensional Single-Crystal van-der-Waals Metals: Ultimately-Downscaled Interconnects with Exceptional Current-Carrying Capacity and Reliability
- Co-PI ($300,000, my share; lead organization is UCLA): UCOP; 10/01/2017 – 09/30/2020; University of California – National Laboratory Collaborative Research and Training: Mesoscopic 2D Materials: From Many-Body Interactions to Device Applications
- PI ($168,000, my share): NSF 1404967; 07/15/2014 - 06/30/2018; CDS&E/Collaborative Research: Genetic Algorithm Driven Hybrid Computational/Experimental Engineering of Defects in Designer Materials

- PI ($1,300,000 + $200,000 matching industry gift, total award): NSF 1124733; 10/01/2011 - 09/30/2016; NEB: Charge-Density-Wave Computational Fabric: New State Variables and Alternative Material Implementation
- Co-PI (~$800,000, my share): DOE SC0012670; 08/01/14 - 07/31/17; EFRI Center Spin and Heat in Nanoscale Electronic Systems (SHINES) – Lead Organization: UCR
- PI ($360,000, total award): NSF 1307671; 08/01/2013 - 07/31/2016; Two-Dimensional Performance with Three-Dimensional Capacity: Engineering the Thermal Properties of Graphene
- PI ($175,000, my share): NSF 1217382; 10/01/2012 - 09/30/2015; Collaborative Research: Graphene Circuits for Analog, Mixed-Signal, and RF Applications
- Co-PI ($379,637, total award): NSF; 01/01/2012 – 01/01/2015; Spin Transport in Topological Insulators
- PI ($75,000, my share): NSF 1549942; 09/01/2015 - 08/31/2017; EAGER: Enhancing Pyroelectric Effects in Nanostructured Materials for High-Efficiency Energy Conversion
- Co-PI (~$800,000, my share): SRC and DARPA; 12/01/12 - 10/30/16; Functions-Accelerated Materials Engineering (FAME) – lead organization: UCLA
- Co-PI ($109,531, my share): NSF 1128304; 09/01/2011 - 08/31/2014; Coupled Charge and Spin Transport in Topological Insulators
- PI ($75,412): NSF 0552562; 04/01/2006 - 03/31/2009; REU Site: Education Through Research in Nanomaterials and Nanodevices
- Co-PI ($121,420, my share): DARPA – DMEA; 01/01/2010 – 01/01/2011; Center for Nanoscale Science and Engineering - 3D Electronics
- PI ($150,000): SRC – DARPA; 01/01/2010 – 01/01/2011; Transport and Thermoelectric Properties of Topological Insulators
- Co-PI ($350,000, my share): SRC – DARPA; 01/01/2009 – 01/01/2011; FCRP Interconnect Focus Center (IFC) - Graphene Lateral Heat Spreaders and Composite Substrates for Interconnect Applications
- PI ($450,000, single PI): ONR; 01/01/2009 – 01/01/2012; Graphene Quilts for Thermal Management of GaN Power Electronics
- Co-PI ($565,000, my share): SRC – DARPA; 01/01/2009 – 01/01/2012; Low-Energy-Dissipation Low-Noise Carbon-Allotrope-Based Nanoelectronics
- PI ($600,000, single PI): AFOSR; 01/01/2007 – 01/01/2010; Phonon-Engineered Heterostructures for Enhanced Carrier Mobility in Electronic and Optoelectronic Devices
- Co-PI ($100,000, my share): DOE; 01/01/2007 – 01/01/2010); Nanostructured Materials for Concentrator Photovoltaic Solar Cells
- Co-PI ($265,000, my share): AFOSR; 01/01/2007 – 01/01/2009; Modeling-Based Optimization of Nanostructures for Solar Cells and IR Photodetectors
- PI ($110,550, single PI): ARO; 01/01/2006 – 01/01/2007; Time-Resolved Single Photon Spectroscopy of ZnO Nanostructures
- PI ($100,000, single PI): NSF – SRC; 01/01/2005 – 01/01/2007; Nanophononics: A New Approach to Electron Transport Enhancement in Nanoscale Devices

- Co-PI ($800,000, my share): SRC – DARPA; 01/01/2003 – 01/01/2009; FCRP Center on Functional Engineered Nano Architectonics (FENA) - Phonon Engineering in Hybrid Bio-Inorganic Nanoelectronics
- Co-PI ($215,000, my share): NASA; 01/01/2006 – 01/01/2008); High Efficiency Radiation-Hard Nanostructure-Based Solar Cells
- PI ($55,000, single PI): UC MICRO; 01/01/2005 – 01/01/2006); Micro-Raman Mapping of Strain Distribution in Heterostructures
- PI ($410,000, single PI): NSF; 01/01/2001 – 01/01/2006; CAREER: Thermal Management at Nanoscale: Fine-Tuning the Phonons
- PI ($225,656, single PI): ONR; 01/01/2003 – 01/01/2004; Temperature Distribution and Self-Heating in GaN Transistors
- PI ($341,987, single PI): ONR; 01/01/2002 – 01/01/2005; Performance Enhancement of AlGaN High-Power Transistors – ONR Young Investigator Award
- PI ($59,800, single PI): NSF; 01/01/2003 – 01/01/2005; Phonon Engineering Concepts for Nanoscale Devices and Circuits
- PI ($80,000, single PI): NSF; 01/01/2001 – 01/01/2003; High-Efficiency Quantum Dot Superlattice Based Thermoelectric Devices
- PI ($184,999, single PI): AFOSR; 01/01/2000 – 01/01/2002; Phonon Annihilation in Semiconductor Nanostructures

TEACHING AND CURRICULUM DEVELOPMENT

- Developed the first courses and study plans for both undergraduate and graduate students specializing in the Nanoscale Materials, Devices, and Circuits (NMDC) area at the Department of Electrical and Computer Engineering, UCR
- Directed preparation of proposal for creation of the campus-wide undergraduate and graduate Materials Science and Engineering (MS&E) Programs
- Served as a Founding Chair of MS&E Program, developed its curriculum, introduced first MS&E courses, supervised educational laboratory development
- Undergraduate courses taught:
    - EE116 Engineering Electromagnetics – I (required course for all EE majors)
    - EE117 Engineering Electromagnetics – II (developed laboratory for this course)
    - EE107 Solid-State Electronics (offered this course for the first time)
    - EE133 Solid-State Electronics (developed new course to replace EE107)
    - EE175 Senior Design Project
    - EE138 Electrical Properties of Materials (required course for MS&E majors)
- Graduate courses taught:
    - EE202 Fundamentals of Semiconductors and Nanostructures (developed new course and taught it from 2000 to 2018)
    - EE207 Noise in Electronic Materials and Devices (developed new course)
    - EE216 Nanoscale Phonon Engineering (developed new course)
    - EE259 Colloquium in Electrical Engineering
    - EE290 Directed Studies and EE297 Dissertation Research

GRADUATED DOCTORAL STUDENTS AND THEIR EMPLOYMENT

- Dr. Sahar Naghibi (PhD, MSE, 2020); Dissertation: "Noncuring graphene thermal interface materials for advanced electronics," employment: Keysight Technologies in Santa Clara, California, USA
- Dr. Tammy C.Y. Huang (PhD, MSE, 2020); Dissertation: "Phononic and photonic properties of shape-engineered silicon nanoscale pillar arrays," employment: Army Research Laboratory (internship), Adelphi, Maryland, USA
- Dr. Adane Geremew (PhD, EE, 2019); Dissertation: "Electron transport and switching in low-dimensional materials," employment: Intel Corporation, Portland, Oregon, USA
- Dr. Ruben Salgado (PhD, MSE, 2019); Dissertation: "Electrical and thermal applications of low-dimensional materials," employment: Intel Corporation, Portland, Oregon, USA
- Dr. Ece Aytan (PhD, MSE, 2019); Dissertation: "Spin-phonon coupling in antiferromagnetic NiO," employment: Intel Corporation, Portland, Oregon, USA
- Dr. Mohammad Saadah (PhD, EE, 2018); Dissertation: "Thermal management of photovoltaic solar cell," employment: Staff Researcher, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia
- Dr. Fariborz Kargar (PhD, EE, 2017); Dissertation: "Experimental investigation of acoustic phonon confinement effects in nanostructured materials," employment: University of California, Riverside, California, USA
- Dr. Chenglong Jiang (PhD, EE, 2017); Dissertation: "Phonon and electron properties of transition metal dichalcogenides: Applications in high-temperature electronics," employment: Hermes Microvision, San Jose, California, USA
- Dr. Hoda Malekpour (PhD, EE, 2016); Dissertation: "Optothermal Raman studies of thermal properties of graphene-based films," employment: Broad Band, Los Gatos, California, USA
- Dr. Sylvester Ramirez (PhD, MSE, 2016); Dissertation: "Anisotropic thermal properties of nanostructured magnetic, carbon and hybrid magnetic-carbon materials," employment: Raytheon, San Diego, California, USA
- Dr. Rameez Samnakay (PhD, MSE, 2016); Dissertation: "Two-dimensional electronic materials and devices," employment: Intel Corporation, Portland, Oregon, USA
- Dr. Richard Gulotty (PhD, MSE, 2015); Dissertation: "Chemical vapor deposition and electronic device applications of graphene," employment: Argonne National Laboratory, Chicago, USA
- Dr. Jackie Renteria (PhD, EE, 2014); Dissertation: "Electronic noise in van der Waals materials and devices," employment: General Atomics, San Diego, California, USA
- Dr. P. Goli (PhD, MSE, 2014); Dissertation: "Graphene enhanced thermal interface materials for Li-ion batteries," employment: Henkel, Irvine, California, USA
- Dr. Zhong Yan (PhD, EE, 2013); Dissertation: "Graphene heat spreader for high-power transistors," employment: Associate Professor, Nanjing University, China
- Dr. Farhan Shahil (PhD, EE, 2013); Dissertation: "Graphene-enhanced thermal interface materials for energy efficient electronics," employment: Intel Corporation, Portland, Oregon, USA

- Dr. Craig Nolen (PhD, EE, 2012); Dissertation: "Large-area identification and quality control technology for graphene and two-dimensional materials," employment: Intel Corporation, Portland, Oregon, USA
- Dr. Zahid Hossain (PhD, EE, 2012); Dissertation: "Fabrication and characterization of transistors with 2D channels," employment: Micron Technology, Boise, Idaho, USA
- Dr. Guanxiong Liu (PhD, EE, 2012); Dissertation: "Fabrication and characterization of graphene devices," employment: Apple Corporation, Cupertino, California, USA
- Dr. Javed Khan (PhD, EE, 2012); Dissertation: "Nanostructured materials for energy generation," employment: Intel Corporation, Portland, Oregon, USA
- Jie Yu (PhD, EE, 2012); Dissertation: "Graphene-on-diamond electronic devices," employment: Lam Research, San Jose, California, USA
- Dr. Vivek Goyal (PhD, MSE, 2011); Dissertation: "Thermal characterization of nanostructured materials," employment: Intel Corporation, Portland, Oregon, USA
- Dr. Desalegne Teweldebrhan (PhD, EE, 2011); Dissertation: "Two-dimensional Dirac materials: From graphene to topological insulators," employment: Intel Corporation, Portland, Oregon, USA
- Dr. Suchismita Ghosh (PhD, EE, 2010); Dissertation: "Thermal conduction in graphene and graphene multi-layers," employment: Intel Corporation, Portland, Oregon, USA
- Dr. Muhhamad Rahman (PhD, EE, 2010); Dissertation: "Fabrication and characterization of nanowire transistors with enhanced performance," employment: Intel Corporation, Portland, Oregon, USA
- Dr. Samia Sabrina (PhD, EE, 2010); Dissertation: "Modeling of thermal transport in graphene devices," employment: Professor, ECE Department, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh
- Dr. Irene Calizo (PhD, EE, 2009); Dissertation: "Raman metrology of graphene," employment: Assistant Professor, Florida International University, Miami, Florida, USA
- Dr. Qinghui Shao (PhD, EE, 2009); Dissertation: "Optimized design and materials for nanostructure based solar cells," employment: Lawrence Livermore National Laboratory, Livermore, California, USA
- Dr. Manu Shamsa (PhD, EE, 2007); Dissertation: "Thermal transport in advanced engineered materials," employment: Intel Corporation, Portland, Oregon, USA
- Dr. Khan Alim (PhD, EE, 2006); Dissertation: "Raman characterization of hybrid nanostructures," employment: Bureau of Reclamations, Sacramento, California, USA
- Dr. Y. Bao (PhD, EE, 2005); Dissertation: "Electrical characterization and applications of quantum dot superlattices," Associate Professor, China
- Dr. J. Zou (PhD, EE, 2002), Dissertation: "Thermal conduction in silicon nanowires and gallium nitride films," employment: Professor, East Illinois University, Illinois, USA

SUPERVISED POSTDOCTORAL RESEARCHERS

- Dr. Fariborz Kargar (Postdoctoral, 2017 - 2019); employment: Research Professor and Project Scientist, University of California, Riverside, California, USA

- Dr. Guanxiong Liu (Postdoctoral 2016 - 2018); employment: Apple Corporation, Cupertino, California, USA
- Dr. Jackie Renteria (Postdoctoral, 2014 - 2015); employment: Director of Engineering, ADTI Media, Temecula, California, USA
- Dr. D.L. Nika (Postdoctoral, 2006 – 2010); employment: Professor and Chair, Department of Physics, Moldova State University, Chisinau, Republic of Moldova
- Dr. I. Bejenari (Fulbright Scholar, 2008 – 2009); employment: Research Associate, Technical University of Moldova, Chisinau, Republic of Moldova
- Dr. W.L. Liu (Postdoctoral, 2003 – 2006); employment: Lead Engineer, Touch Down Technology, Los Angeles, California, USA
- Dr. V. Fonoberov (Postdoctoral, 2002 – 2006); employment: Lead Engineer, Aimdyn, Inc., Santa Barbara, California, USA
- Dr. V.O. Turin (Postdoctoral, 2003 – 2005); employment: Professor, Department of Electronics and Systems, Orel State Technological University, Orel, Russia
- Dr. S. Dmitriev (Visiting, 2003); employment: Professor, Moldova State University, Chisinau, Republic of Moldova
- Dr. O. Lazarenkova (Postdoctoral, 2001 – 2003); employment: Research Engineer, NASA Jet Propulsion Laboratory, Pasadena, California, USA

AWARDS RECEIVED BY GRADUATE STUDENTS

- Fariborz Kargar, Editors' Choice and Cover of the March Issue of the Applied Physics Journal for the paper "The discrete noise of magnons," 2019
- Ece Aytan, The Best Poster Award for the presentation "Spin-phonon coupling in NiO", Department of Energy (DOE) Program Review and Workshop, Center on Spins and Heat in Nanoscale Electronic Systems (SHINES), Sand Diego, California, USA 2018
- Adane Geremew, The Hot Paper Recognition from the Editors of Nanoscale for the paper "Unique features of the generation–recombination noise in quasi-one-dimensional van der Waals nanoribbons," 2018
- Hoda Malekpour, The Most Downloaded Paper Recognition from the Editors of Journal of Raman Spectroscopy for the paper "Raman-based technique for measuring thermal conductivity of graphene and related materials", 2018
- Guanxiong Liu, The Best Poster Award for the presentation "Quasi-1D van der Waals materials: applications in interconnects," DARPA – SRC Center for Function Accelerated nanoMaterial Engineering (FAME) Review and Workshop, Los Angeles, USA, 2017
- Guanxiong Liu, The Best Poster Award for the presentation "Charge density waves in two-dimensional materials," Materials Research Society (MRS) Spring Meeting, Phoenix, Arizona, USA, 2016
- Zhong Yan, The Best Paper Award for the paper "Graphene heat spreader for thermal management of high power GaN transistors," International Microelectronics and Packaging Society (IMAPS) Conference, Los Gatos, California, 2012

- Desalegne Teweldebrhan, The Best Student Paper Award – MRS Silver Medal for the paper "Tuning graphene properties with electron-beam irradiation," Materials Research Society (MRS), San Francisco, California, USA, 2011
- Guanxiong Liu, The Best Student Paper Award – MRS Symposium on 2D Functional Materials for the paper "Flicker noise in graphene and 2D materials," Materials Research Society (MRS), San Francisco, California, USA, 2011
- Javed Khan, The Best Student Paper Award – The 2nd Place Award for the paper "Graphene-like" exfoliation of $TiTe_2$ quasi-2D crystals," The Annual Spring Meeting of the Electrochemical Society (ECS), Montreal, Canada, 2011
- Guanxiong Liu, The Young Scientist Award for the "Low-frequency noise in back-gated graphene field-effect transistors" at the 38th Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI), San Diego, California
- Zhong Yan, The Young Scientist Award for the "Few-layer graphene top-surface heat spreaders for high-power electronics" at the 38th Conference on the Physics and Chemistry of Surfaces and Interfaces (PCSI), San Diego, California
- Samia Subrina, The 2rd Place Award in the International Research Poster Competition for "Thermal management of 3D electronics with graphene heat spreaders," Society of Women Engineers (SWE), Tampa, Florida, USA, 2010
- Guanxiong Liu, The Best Student Research Presentation Award for "Electronic noise in graphene transistors," Advanced Workshop on Frontiers in Electronics (WOFE), Rincon, Puerto Rico, 2009
- Desalegne Teweldebrhan, UCR Alliance for Graduate Education and Professoriate Award to report "Irradiated graphene," Graphene Week, College Park, Maryland, USA, 2009
- Suchismita Ghosh, The Inventor Recognition Award for "Graphene lateral heat spreaders," TECHCON Conference, Austin, Texas, USA, 2009
- Javed Khan and Craig Nolen, The 2nd Place Award in the Graduate Student Competition for "Wireless sensor networks with graphene-based rechargeable power sources," IEEE EDS Meeting at UC Riverside, California, 2009 (Judges: EDS Presidents C. Claeys and R. Jindal)
- Samia Subrina, The 3rd Place Award in the International Research Poster Competition for "Thermal management of electronics with graphene heat spreaders," Society of Women Engineers (SWE), Long Beach, California, USA, 2009
- Vivek Goyal, The Best Research Poster Award for "Heat propagation in graphene: Theory and experiment," DARPA –SRC Workshop and Review, Los Angeles, California, USA, 2009 – selected from ~ 50 entries from the top US universities
- Suchismita Ghosh, The 2rd Place Award in the International Research Poster Competition for "Giant thermal conductivity of graphene: Thermal management applications," Society of Women Engineers (SWE), Baltimore, Maryland, USA, 2008
- Irene Calizo, Graduate Dean Dissertation Fellowship Award for her PhD dissertation "Raman nanometrology of graphene," UC Riverside, California, USA, 2008
- Irene Calizo, The 2rd Place Award in the International Research Poster Competition for "Robust micro-Raman identification of the atomic layers of graphene," Society of Women Engineers (SWE), Nashville, Tennessee, USA, 2008

- Manu Shamsa, The Best Student Paper Award – MRS Silver Medal for the paper "Thermal conductivity of nanocrystalline diamond films," Materials Research Society (MRS), San Francisco, California, USA, 2007
- Manu Shamsa, IBM International Dissertation Fellowship Award, IBM T.J. Watson Research Center, Yorktown Heights, New York, USA, 2007 - 2009
- Manu Shamsa and Khan Alim, The 3rd Place Award in the Best Research Competition for the presentation "Functionalized nanostructures with the negative differential resistance," DARPA –SRC Workshop and Review, Los Angeles, California, USA, 2006 – selected from ~ 50 entries from the top US universities
- Manu Shamsa, The Best Research Poster Award for the paper "Modeling of thermal conduction mechanisms in the amorphous inter-layer dielectrics," Materials Research Society (MRS), San Francisco, California, USA, 2006
- Khan Alim and Mayank Varshney, The 2nd Place Award in the Best Research Competition for the presentation "New approaches for heat removal from beyond-CMOS nanoelectronic circuits," DARPA –SRC Workshop and Review, Los Angeles, California, USA, 2005 – selected from ~ 50 entries from the top US universities
- Jie Zou, The Best Student Paper Award – MRS Silver Medal for the paper "The lattice thermal conductivity in semiconductor nanowires," Materials Research Society (MRS), San Francisco, California, USA, 2002

PROFESSIONAL SERVICE

- Chair, IEEE Nanotechnology Award Committee
- Member, IEEE Fellow Committee
- Deputy Editor-in-Chief, Applied Physics Letters (2015 – present)
- Associate Editor, Applied Physics Letters (2014 – 2015)
- Senior Editor, IEEE Transactions on Nanotechnology (2012 – 2014)
- Member, International Advisory Board, Advanced Electronic Materials (2015 – present)
- Member, Editorial Board, C – Journal of Carbon Research (2014 – present)
- Member, Scientific Advisory Board, Graphenea Inc., Spain (2013 – present)
- Member, IEEE Nanotechnology Award Committee (2011 – present)
- Member, SPIE Fellow Committee (2011 – 2014)
- Associate Editor, IEEE Transactions on Nanotechnology (2009 – 2012)
- Editor, Innovative Graphene Technologies: Development, Characterization and Evaluation (Smithers Rapra, London, U.K., 2013)
- Editor (with Andre Geim, Manchester University, 2010), Two-Dimensional Functional Materials (Cambridge Press, 2012) – Proceedings of MRS Fall Meeting Symposium on 2D Materials
- Editor (with K.L. Wang, UCLA), Handbook of Semiconductor Nanostructures and Nanodevices (ASP, Los Angeles, 2006), volumes: (1) Self-Assemblies, Quantum Dots, and Nanowires; (2) Nanofabrication and Nanoscale Characterization; (3) Spintronics and Nanoelectronics; (4) Nanophotonics and Optoelectronics; (5) Nanodevices and Circuits
- Editor, Noise and Fluctuations Control in Electronic Devices (ASP, Los Angeles, 2002)

- Member, Advisory Board, Advances in Nanotechnology (ASP, Los Angeles), 2000 – present
- Editor (with M. Jamal Dean, McMaster U.), Noise in Devices and Circuits III, Proceedings of SPIE, Vol. 5844, 2005
- Reviewer, Engineering Electromagnetics textbooks (undergraduate and graduate level) published by McGraw-Hill, Wiley, Oxford University Press and Prentice Hall, 2003 – 2008

UNIVERSITY SERVICE

- Chair, BCOE Strategic Planning Committee, 2020 – present
- Chair of the Faculty Search Committees in Spintronics, Magnonics, Phononics, 2015 – 2019
- Director, UCR Nanofabrication Facility (NanoFab), 2016 – present
- Member of the Campus-Level Search Committees, 2016 - 2019
- Founding Chair, UCR Materials Science and Engineering Program (MS&E), 2006 – 2012
- Member, UCR Strategic Planning Committee, Subcommittee on Academic Excellence, 2009
- Member, Materials Science and Engineering Faculty Search Committee, 2009 – 2010
- Chair, Materials Science and Engineering Faculty Search Committee, 2007 – 2009
- Principal Investigator, NSF Research Experience for Undergraduates (REU) Site on Nanomaterials and Devices, UCR, 2006 – 2009
- Member, Materials Science and Engineering (MSE) Building Committee, 2005 – 2010
- Director, Summer Undergraduate Research Institute in Science and Engineering (SUNRISE), Undergraduate Institute on Nanomaterials, NSF REU Site, UCR, 2006 – 2008
- Faculty Supervisor, UCR Student Chapter of ECS, 2011 – 2014
- Faculty Supervisor, UCR Student Chapter of OSA, 2010 – 2014
- Member, UC-Riverside Academic Senate Committee on Research, 2006 – 2008
- Chair, Electrical Engineering Graduate Committee, 2006 – 2008
- Graduate Advisor, Department of Electrical Engineering, 2006 - 2008
- Chair, Electrical Engineering Undergraduate Committee, 2003 – 2005
- Undergraduate Advisor, Computer Engineering, Joint Program offered by Department of Electrical Engineering and Department of Computer Science, 2004 – 2005
- Chair, ABET – 2000 Electrical Engineering Committee, 2003 – 2005
- Member, College of Engineering Dean Search Committee Member, 2004 – 2005
- Member, Electrical Engineering Faculty Search Committee, 1999 – 2003
- Member, UCR Focus Group on Nanotechnology, 1999 – 2005

HIGHLY CITED RESEARCHER PUBLICATION RECORD

I am a Clarivate Analytics (Thomson Reuters) Highly Cited Researcher since 2015. In the last years, I was selected as a Highly Cited Researcher in two research categories: "Physics" and "Interdisciplinary". My h-index is 90 with the total number of citations above ~50,000 (2020). My journal papers are currently cited more than ~5,000 times per year. For more information on publication record, visit my group's web-site at https://balandingroup.ucr.edu/ or the Google Scholar web-site: https://scholar.google.com/ .