

PROCESS & APPLICATIONS ENGINEER

PRODUCT DEVELOPMENT | PROCESS ANALYSIS, ENGINEERING & DEVELOPMENT | APPLICATION ENGINEERING | PRODUCTIVITY IMPROVEMENT | YIELD ENGINEERING | STATISTICAL QA | PROJECT MANAGEMENT | DATA MINING | QUANTITATIVE ANALYSIS | DATA VISUALIZATION | MICROFABRICATION

An increasingly influential thought leader in process engineering known for intelligence, innovation and hard work. Provided creative energy, problem solving and organizational skill critical to successful product development, commercialization and production yield improvements.

Co-authored more than **20 research papers** published in peer reviewed scientific journals (including such **high impact factor journals** as *Langmuir*, *Nanotechnology*, and *Optics Express*), seven of which as first author, including "Microfluidic hydrothermal growth of ZnO nanowires over high aspect ratio microstructures," featured as a cover story by *Nanotechnology*.

Two patents in the area of microstructured devices for application in solar cells based on zinc oxide nanowires.

Ph.D., Electrical Engineering, University of South Florida. GPA: 3.84. *ZnO nanostructures*

M.Sc., Applied Physics, University of South Florida. *Phase Change memory cells*

M.Sc./B.Sc., Semiconductor Physics and Microelectronics, Novosibirsk State University - the **best Russian university** in scientific research efficiency according to QS World University Rankings. *Vibrational spectra of periodic nanostructures*

AREAS OF EXPERTISE

- High-volume semiconductor processing experience includes process and application engineering and development within a 14nm world-class chip manufacturing research facility.
- Qualified and experienced in the process development of new and modified techniques and methods applied in product manufacturing in semiconductor industry.
- Operations management (MES), process improvement (SPC, E3), product development, parts availability (BOM) and quantitative analysis (DOE) experience in a high-volume production environment.
- Have consistent technical and analytical skills and deep understanding of semiconductor processing and characterization hardware.
- Research background spans from computational physics to complex semiconductor nanomaterials to innovative semiconductor devices and biomedical engineering on the border of photonics, nanotechnology, bioimaging and microfluidics.
- Hands on experience with full cycle of semiconductor processing: photolithography, wet etch, dry etch, deposition and characterization

ADVANCED TECHNIQUES QUALIFICATIONS

- **Characterization:** Fourier Transform Infrared Spectroscopy (FTIR), Visible and UV Reflectance and Transmittance Spectroscopy, Raman Spectroscopy, Atomic Force Microscopy (AFM), Scanning Electron Microscopy (SEM), Energy Dispersive Spectroscopy (EDS), X-Ray Diffraction Spectroscopy (XRD), Focused Ion Beam (FIB), and Photoluminescence (PL).
- **Growth:** Sputtering, ALD, Electron Beam Evaporation, Thermal Evaporation, CVD, Hydrothermal
- **Etching:** Wet Etch, Deep Reactive Ion Etch, Reactive Ion Etch.
- **IC and MEMS fabrication and characterization techniques:** Profilometry, Ellipsometry, Photolithography, Lift Off, Electron Beam Lithography.
- **Data Analysis:** JMP, JSL scripting, Statistica, Pathfinder, Origin, MathCad
- **Programming/modeling/scripting:** C, Fortran, Bash, Python, VB, JSL, LabView, Opti-FDTD, SolidWorks, Coventor, ANSYS

PROFESSIONAL EXPERIENCE

NIKON PRECISION INC

July 2016 -present

Applications Engineer

- Worked with customer to provide Process development support and tool integration in R&D and manufacturing environment
- Provided support for NSR performance improvement that is beyond specification or compliance to non-specified condition.

- Troubleshoot NSR performance concerns through analysis of log file, test results and customer product or test information.
- Based on analysis or judgment, made recommendations on NSR performance improvement
- Evaluated new NSR functions or options

INTEL CORPORATION**February 2014 - March 2016****Process Engineer**

- Engineered and managed 24/7 module operations at Intel's primary semiconductor manufacturing facility at Class 10 cleanroom.
- Experience with tool/process matching and characterization using statistical analysis and monitoring volumes of production data for defining the process flow and equipment configuration. Methods include JMP, SPC, DOE and Excursion Protection (E3) software.
- Developed the strategic initiatives to implement process and operation stability, drive quality/yield improvements and efficient manufacturability.
- Responsible for tool preventative maintenance, management of troubleshooting activities, regular monitoring of tool and process performance, defect analysis and reduction.
- Held full project ownership for improvements in safety, yield, cost, and improved manufacturability.

UNIVERSITY OF SOUTH FLORIDA**August 2005 - December 2013****Post-doctorate Research Scholar, Department of Chemical & Biomedical Engineering**

- Conducted research in optoelectronics, bioengineering and device fabrication.
- Mentored and trained graduate students.
- Defined equipment and supplies requirements, experimental research workflows, purchasing and installing tools necessary for experiments,
- Responsible for lab safety and compliance to DEH&S requirements.
- Wrote scientific publications, grant proposals, and presentations.

Graduate Research Assistant, Department of Mechanical Engineering

- Conducted research in fields of nano- and microstructures and device fabrication.
- Managed lab operations, including purchasing of necessary equipment and supply materials, compliance to safety standards, and daily operational oversight.

Graduate Research Assistant, Department of Physics

- Led the research into molecular dynamics simulations, shock-induced plasticity, and phase transformations.
- Wrote scientific publications, grant proposals, and presentations.

INSTITUTE OF SEMICONDUCTOR PHYSICS**September 2002 - May 2005****Engineer**

"Laboratory of Physical Chemistry of Semiconductor Surface and Semiconductor - Dielectric Systems", Institute of Semiconductor Physics, Novosibirsk, Russia.

- Conducted the research and wrote scientific publications in fields of vibrational spectroscopy of periodic semiconductor nanostructures.

EDUCATION

2009 -2012**Ph.D. in Electrical Engineering GPA 3.84**

University of South Florida, Department of Electrical Engineering, Tampa, FL.

USF is a global research university classified by the Carnegie Foundation for the Advancement of Teaching in the top tier of research universities, a distinction attained by only 2.2 percent of all universities

2005-2009:**M.Sc. in Applied Physics**

University of South Florida, Department of Physics, Tampa, FL.

1999-2005:**M.Sc./B.Sc. in Semiconductor Physics and Microelectronics**

Department of Physics, Novosibirsk State University, Russia.

NSU is the **best Russian university** in scientific research efficiency according to QS World University Rankings.

SELECTED PUBLICATIONS

1. **Mikhail Ladanov**, Surya Cheemalapati, and Anna Pyayt, *Optimization of light delivery by a nanowire-based single cell optical endoscope*, Optics Express, Vol. 21, Issue 23, pp. 28001-28009 (2013)
2. **Mikhail Ladanov**, Paula Algarin-Amaris, Garrett Mathews, Manoj Ram, Sylvia Thomas, Ashok Kumar, Jing Wang, *Microfluidic hydrothermal growth of ZnO nanowires over high aspect ratio microstructures*, Nanotechnology, 2013 Nanotechnology **24** 375301
3. **Mikhail Ladanov**, Paula Algarin-Amaris, Pedro Villalba, Yusuf Emirov, Garrett Matthews, Sylvia Thomas, Manoj K. Ram, Jing Wang, Ashok Kumar, *Effects of the Physical Properties of Atomic Layer Deposition Grown Seeding Layers on the Preparation of ZnO Nanowires*, Journal of Physics and Chemistry of Solids, 74 (11), 1578-1588, 2013
4. Pedro Villalba, Punya Basnayaka, **Mikhail Ladanov**, Beverly Liriano, Manoj Ram, Subhra Mohapatra and Ashok Kumar (2012), *Cholesterol Biosensor Based on Nanodiamond-Polypyrrole Conducting Nanocomposite Membrane*. MRS Proceedings, 1414, mrsf11-1414-hh02-03 doi:10.1557/opl.2012.428
5. **Mikhail Ladanov**, Manoj K. Ram, Garrett Matthews, Ashok Kumar, *Structure and Opto-electrochemical Properties of ZnO Nanowires Grown on n-Si Substrate*, Langmuir 27 (14), 9012-9017, 2011
6. **Mikhail Ladanov**, Kranthi Kumar Elineni, Manoj Ram, Nathan D. Gallant, Ashok Kumar, Garrett Matthews, *A Resistless Process for the Production of Patterned, Vertically Aligned ZnO Nanowires*, Mater. Res. Soc. Symp. Proc. Vol. 1302, 2011
7. **Mikhail Ladanov**, Manoj Ram, Ashok Kumar, Garrett Matthews, *Novel Aster-like ZnO Nanowire Clusters for Nanocomposites*, Mater. Res. Soc. Symp. Proc. Vol. 1312, 2011
8. McLaughlin, Keith; **Ladanov, Mikhail**; Oleynik, Ivan; Zybin, Sergey; Elert, Mark; White, C. T., *Anomalous elastic response of diamond single crystals to shock compression*. American Physical Society, APS March Meeting, March 5-9, 2007, abstract #B21.003
9. **M. Yu. Ladanov**, A. G. Milekhin , A. I. Toropov, A. K. Bakarov, A. K. Gutakovskii, D. A. Tenne, S. Schulze and D. R. T. Zahn, *Interface phonons in semiconductor nanostructures with quantum dots*, Journal of Experimental and Theoretical Physics 101-3, 554-561 (2006).
10. A.G. Milekhin, A.I. Toropov, A.K. Bakarov, **M.Yu. Ladanov**, A.K. Gutakovskiy, D. A. Tenne, G. Zanelatto, J. C. Galzerani, S. Schulze, and D. R. T. Zahn, *Phonons in InGaAs/AlGaAs Quantum Dot Superlattices: a Raman study*, Proceedings of 12th Int.Conference on Narrow Gap Semiconductors, 3-7 July, 2005, Toulouse, France, invited talk, Institute of Physics Conference Series, eds., J. Kono, J. Leotin (Taylor & Francis, New York) 187, 99-106, (2006) ISBN 0-7503-1016-2.
11. A.G. Milekhin, **M.Yu. Ladanov**, W.V. Lundin, A.I. Besulkin, A. Smirnov, V.Yu. Davydov, C. Himcinschi, M. Friedrich, and D.R.T. Zahn, *IR reflection of optical phonons in GaN/AlGaIn superlattices*, Int.Conference Phonons-2004, St. Petersburg, Russia, 2004, Physica Status Solidi (c), 1, Issue 11, Pages 2733 – 2736 (2004).
12. A.G.Milekhin, A.I.Nikiforov, **M.Yu.Ladanov**, O.P. Pchelyakov, D.N.Lobanov, A.V.Novikov, Z.F.Krasil'nik, S.Schulze, and D.R.T.Zahn: *Phonons in Ge/Si Quantum Dot Structures: influence of growth temperature*; Physica E, 21 (2-4) pp. 464-468 (2004).
13. A.G.Milekhin, A.I.Toropov, A.K.Bakarov, **M.Yu.Ladanov**, G.Zanelatto, J.C.Galzerani, S.Schulze, and D.R.T.Zahn, *Vibrational spectroscopy of InAs and AlAs Quantum Dot Structures*, Physica E: Low-dimensional Systems and Nanostructures, 21 (2-4) pp.241-246 (2004).
14. A.G.Milekhin, A.I.Toropov, A.K.Bakarov, **M.Yu.Ladanov**, G.Zanelatto, J.C.Galzerani, S.Schulze, D.R.T.Zahn, *Optical Phonons in InAs and AlAs Quantum Dot Structures*, Appl. Surf. Sci. 234, p. 45 (2004).
15. A.G.Milekhin, A.I.Nikiforov, **M. Yu.Ladanov**, O.P. Pchelyakov, S.Schulze, and D.R.T.Zahn: *Resonant Raman Scattering by strained and relaxed Ge Quantum Dots*, Phys. of Solid State 46(1) 92 (2004).
16. A.G. Milekhin, A.I. Nikiforov, **M. Yu. Ladino**, O.P. Pchelyakov, D.N. Lobanov, A.V. Novikov, Z.F. Krasil'nik, S. Schulze, and D.R.T. Zahn: *Vibrational spectrum of Ge/Si Structures with Quantum Dot: influence of growth temperature and substrate orientation*; Abstract book of VI Russian Conference of Semiconductor Physics, 27-31 October 2003, p.384
17. A.G. Milekhin, A.I. Nikiforov, **M. Yu. Ladanov**, O.P. Pchelyakov, S. Schulze, D.R.T. Zahn: *Raman Scattering by Strained and Relaxed Ge Quantum Dots*; 10th Seminar of Asia-Pacific Academy of Materials (APAM) 2-6 June, 2003, Novosibirsk, Russia, Proceedings of X Topical Seminar and III Conference "Materials of Siberia" "Nanoscience and technology" devoted to 10th anniversary of APAM, Novosibirsk, Russia, 273 (2003)
18. A.G.Milekhin, A.I.Toropov, A.K.Bakarov, **M.Yu.Ladanov**, G. Zanelatto, J.C.Galzerani, S.Schulze and D.R.T.Zahn, *Infrared Reflectivity and Raman Spectra of InAs/AlAs Periodical Structures with InAs and AlAs Quantum Dots*, 11th International Symposium "NANOSTRUCTURES: Physics and Technology", St Petersburg, Russia, 23-28, June 2003.
19. A.G. Milekhin, A.I. Nikiforov, O.P. Pchelyakov, D. Tenne, **M. Ladanov**, S. Schulze, D.R.T. Zahn, *Resonant Raman scattering by strained and relaxed Ge quantum dots*, Mat. Res. Soc. Symp. Proc. Vol. 737, E13.7.1, 2003