

## **Sergey A. Nikishin**

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### **Experience**

Professor, 09/2009 – present

Texas Tech University, Department of Electrical and Computer Engineering,  
Member of Nano Tech Center at Texas Tech University

Associate Professor, 09/2000 – 08/2009

Texas Tech University, Department of Electrical and Computer Engineering,  
Member of Nano Tech Center at Texas Tech University

Senior Research Associate, 02/1997 – 09/2000

Texas Tech University, Department of Electrical and Computer Engineering,

Senior Research Associate, 12/1995 – 02/1997

Colorado State University, Department of Electrical Engineering

Senior Research Scientist (Supervised a group of 10 professionals), 1991 – 1995

Ioffe Physical-Technical Institute, Russian Academy of Sciences, Laboratory of Quantum Size  
Heterostructures, St. Petersburg, Russia

Research Scientist (Supervised 2 PhD students), 1986 – 1991

Ioffe Physical-Technical Institute, Russian Academy of Sciences, St. Petersburg, Russia

Junior Researcher (Supervised 5 MS students), 1980-1986

Ioffe Physical-Technical Institute, Russian Academy of Sciences, St. Petersburg, Russia

Engineer, 1979 – 1980

Ioffe Physical-Technical Institute, Russian Academy of Sciences, St. Petersburg, Russia

Engineer, 1975 – 1979

Scientific Research Institute GIRICOND in POSITRON, Inc., St. Petersburg, Russia

### **Education**

- Ph.D. in Physics & Mathematics - 1982, Politechnical Institute, St. Petersburg, Russia.  
Thesis: “Liquid Phase Electro-Epitaxy of GaAs and AlGaAs”  
Advisors: Prof. Mikhail G. Mil’vidskii and Prof. Ruben P. Seisyan
- MS in Electrical Engineering -1975, St. Petersburg State Electro-Technical Institute, Russia  
Thesis:”Design and fabrication of AlGaAs based light-emitting diodes”  
Advisor: Dr. V. M. Marakhonov, POSITRON, Inc., St. Petersburg, Russia.

### **Membership in professional societies:**

- IEEE (since 1997)
- Materials Research Society (since 1997)
- SPIE (2006, 2007)

**Awards/Honors**

- In 2007: Texas Tech University College of Engineering Outstanding Research Award
- In 1987: awarded a honorary title “The Inventor of USSR”
- In 1985: shared prestigious (the highest rating of prestige for young scientists, 33 years old or younger) the scientific USSR Leninski Komsomol’s prize for: “The development of theory of stable and metastable states of crystal-melt systems and the transfer of results to production of optoelectronic devices”. Sole Ioffe Institute member of the winning team.

**Funded projects**

*External Proposal Awards with Amount Credited to S. Nikishin (\* by ORS).*

Date	Agency & Program	Title of Proposal	Total Award	Credited *
06/11-05/12	NSF	Supplement: RHEED System ANN NIRT : GOALI : Nano-Engineering Efficient Optoelectronic Devices	\$19,900	\$19,900
09/10-08/13	NSF	Collaborative Research: Vertical GaN Nanostructures on Silicon Fins for Power Electronics and Future Integration with Silicon Technology	\$210,000	\$105,000
09/10-08/11	US Army	Nano-Photonics Devices Research	\$1,405,000	\$224,800
06/10-05/12	NHARP Texas	Development of new semiconductor materials for nanoengineered	\$196,460	\$98,230
09/09-08/10	US Army	Nano-Photonics Devices Research	\$1,358,458	\$163,015
09/09-08/12	NSF MRI	Acquisition of a MBE System for Nano-Engineered AlGaInN Optoelectronic Devices: Research, Training, and Education	\$646,520	\$129,304
08/08-08/09	US Army	Nano-Photonics Devices Research	\$1,420,000	\$170,400
02/08-01/13	Texas Emerging Technology Fund	Research Superiority in Nanophotonics	\$2,000,000	\$100,000
08/07-02/09	US Army	Nano-Photonics Devices Research	\$902,000	\$180,400
06/06-06/12	NSF NIRT GOALI	Nano-Engineering Efficient Optoelectronic Devices	\$1,000,000	\$200,000
05/06-01/09	THECB - ARP	AlGaInN-Based Nano-Structures for High Power Ultraviolet Light Emitting Diodes	\$100,000	\$100,000
09/03-08/07	NSF NIRT	Nano-arrays of large bandgap semiconductors for light	\$1,200,000	\$349,625

		emitting and spintronic devices		
08/03-07/07	NSF	Device Processing Studies of Aluminum-Rich AlGa <sub>N</sub> Superlattices	\$759,329	\$138,600
08/03-07/06	NSF	REU Supplement: Device Processing Studies of Aluminum-Rich AlGa <sub>N</sub> Superlattices	\$6,000	\$1,980
09/02-12/03	US Army/SBCCOM	Microsystems for detecting liquid and gaseous hazards	\$385,000	\$46,146
03/02-02/03	Government of Vietnam	Computer simulation of LED structures-I	\$12,600	\$12,600
	<b>External funds</b>	<b>total</b>	<b>\$11,734,667</b>	<b>\$2,040,000*</b>

### *Texas Tech Competitive Awards*

1. TTU-TTUHSC joint initiative: "Development of a Phage-Based Electronic Biosensor", (FY07-FY10), **\$218,856** (with Profs. J. Berg & J. Fralick, 25% for **S. Nikishin**)

### *Internal Awards*

2. ECE TTU funds (FY05), "Research support," **\$3,000**
3. COE TTU funds (FY07), "Institutional Enhancement - Nano Tech Center", **\$20,400** (with Profs. M. Holtz, G. Berg, A. Bernussi, & H. Temkin).
4. COE TTU funds (FY08), "Institutional Enhancement - Nano Tech Center", **\$20,400** (with Profs. M. Holtz, G. Berg, A. Bernussi, & H. Temkin).
5. COE TTU funds (FY09), "Institutional Enhancement - Nano Tech Center", **\$20,400** (with Profs. M. Holtz, G. Berg, A. Bernussi, & H. Temkin).
6. COE TTU funds (FY09), "Institutional Enhancement - Nano Tech Center", **\$20,400** (with Profs. M. Holtz, G. Berg, & A. Bernussi).

### **Teaching**

#### *Graduate Education*

##### Doctoral Students Supervised:

1. Xiaoyan (Shawn) Xu, "The Plasma Processing for Optical and Electronic Devices", graduated in May 2009, Lubbock, TTU. Now with Oxford Instruments America, Inc., Concord, MA.
2. Indra Chary, "Low resistance ohmic contacts and the mechanism of current transport through Au/Ni/p-GaN and Au/Ni/p-Al<sub>x</sub>Ga<sub>1-x</sub>N", graduated in May 2009, Lubbock, TTU. Now with International Rectifier Inc., St. Paul, MN.
3. Anil Chandolu, "X-ray diffraction studies of light emitting diode structures based on short period superlattices of AlN/AlGaInN," graduated in December 2007, Lubbock, TTU. Now with International Rectifier Inc., St. Paul, MN.
4. İulian Gherasoiu, "Metalorganic molecular beam epitaxy of GaN and AlN for optoelectronic device applications," graduated in May 2004, Lubbock, TTU. Now with RoseStreet Labs Energy, Phoenix, AZ.

##### Current Doctoral Students:

1. Mahesh Pandikunta, "AlGaInN superlattices for optoelectronic devices", on going (01/2010).

2. Huseyin Ekinici, “ZnSnP<sub>2</sub> on GaAs and III-Nitrides on Si for solar cell applications”, on going (01/2012).

Master's Students Supervised:

1. Mahesh Pandikunta, “X-ray study of III-Nitrides and TiO<sub>2</sub> nano tubes for semiconductor device applications”, – (2009).
2. Anusha Kolla, “Package Level Qualification of New Substrate for Battery Charge Management Devices”, – (2008).
3. Aditya Akula, “X-ray study of Mg and Si doped III-Nitrides”, – (2007).
4. Kaveri Mathur, “Ohmic contacts for AlN/AlGaInN-based light emitting diodes”, – (2006).
5. Manjunath Basavaraj, “X-ray diffraction studies of structural perfection of doped and undoped AlGaInN epitaxial layers grown on Si and sapphire” – (2005).
6. Jayant Saxena, “Plasma etching of AlGaInN alloys for device applications” – (2004).
7. Kumbasi Gopalakrishna, Amit “Electrical properties of short period AlN/AlGaInN superlattices for photodetector's applications” – (2004).
8. Sendill Kumar Gnanaeswaran, “Optical properties of multi quantum well based light emitting diodes” – (2003).

International Doctoral Students Advised:

1. Boris Borisov, “Growth of AlGaInN by gas source molecular beam epitaxy“, will be graduated at Polytechnical Institute in St. Petersburg, Russia in Fall 2008. Experimental work (2002 – 2008) was carried out at TTU under **Prof. Nikishin** supervision.
2. Vladimir Kuryatkov, “Design and fabrication of deep UV photodetectors based on AlGaInN alloys”, graduated in 2006, Petersburg Nuclear Physics Institute (Gatchina, St. Petersburg district, Russia). Experimental work (2002 – 2006) was carried out at TTU under **Prof. Nikishin** supervision.
3. Kirill Kizhaev, “Study of distributed-feedback generation in InGaAsP/InP lasers ( $\lambda=1.5-1.6 \mu\text{m}$ ) with a composite active layer,” graduated in 1991, Ioffe Institute, St. Petersburg, Russia
4. Dmitriy Sinyavskii, “Electro-liquid phase epitaxy of multi-wavelength laser heterostructures,” graduated in 1990, Ioffe Institute, St. Petersburg, Russia

Post Doctoral Training (Nano Tech Center)

1. Oleg Ledyayev (MS from Russia), “Plasma assisted molecular beam epitaxy of intrinsic III-N semiconductors”. On going since May 2011.
2. Vladimir Kuryatkov (PhD from Russia), “Semiconductor device processing and testing”. Together with Prof. M. Holtz. On going since 2000.
3. Vladimir Mansurov (PhD from Russia), “Gas source molecular beam epitaxy of III-Nitrides”, From February 2009 to June 2011.
4. Xiaoyan (Shawn) Xu (TTU PhD), “Gas source molecular beam epitaxy of III-Nitrides”. From June 2009 to October 2010.
5. Anil Chandolu (TTU PhD), “Selective area epitaxy of InGaInN/GaN quantum structures”. From January 2008 to April 2008.
6. Gela Kipshidze (PhD from Russia), “Molecular beam epitaxy of GaN and AlGaInN”. This work received DARPA award for outstanding performance in 2003, 2000-2006.
7. İulian Gherasoiu (TTU PhD), “Metalorganic chemical vapor deposition of GaInN and AlGaInN for optoelectronic device applications”. From June 2004 to February 2006.
8. Boris Yavich (PhD from Russia), “Metal Organic Chemical Vapor Deposition of InGaInN and AlGaInN alloys”, 2003 – 2005.
9. Le Tuan (PhD from Vietnam), “Computer simulation of wide bandgap semiconductor structures based on AlN/AlGaInN superlattices for light emitting and laser diodes applications”, 2002-2003.

Doctoral Student Committees:

1. Yong Zhao (ECE Department), “VO<sub>2</sub> Material Study and Its Application for Terahertz Modulation”, 2012, Lubbock, TTU.
2. Cameron Hettler (ECE Department), “High voltage silicon carbide photoconductive semiconductor switches”, 2012, Lubbock, TTU.
3. Xuan Pan (ECE Department), “Titanium dioxide nanostructure and nanocomposite for energy related applications”, 2012, Lubbock, TTU.
4. Ananth Krishnan (ECE Department), "Design, Fabrication and Characterization of Passive & Active Plasmonic Waveguide Devices", 2010, Lubbock, TTU.
5. Stephen Frisbie (ECE Department), “Imaging of surface plasmon-coupled fluorescence and optical reflectivity of dielectric-metal-dielectric structures”, 2009, Lubbock, TTU.
6. Daoying Song (Physics Department), “Phonons and optical properties of III-nitride semiconductors”, 2007, Lubbock, TTU.
7. Jonshin Yun (ECE Department), “Ohmic contact formation on large bandgap semiconductor/*in situ* thin film thermal conductivity measurement”, 2005, Lubbock, TTU.
8. Iftikhar Ahmad, (Physics Department) “Study of self-heating in GaN/AlGa<sub>N</sub> heterostructure FET using visible and ultraviolet micro-Raman spectroscopy,” 2005, Lubbock, TTU.
9. Kisik Choi (ECE Department), “Growth and characterization of high-k dielectrics,” 2004, Lubbock, TTU.
10. Rusty Harris, (Physics Department) “High-k dielectrics and their applications,” 2003, Lubbock, TTU.

Master’s Students Committees:

1. Vahini Yerraguntla, “Simulation and experiments towards ferroelectric-gate field effect transistors”, 2010.
2. Gautam Rajanna, “Time Resolved Photoluminescence Study of Al<sub>0.45</sub>Ga<sub>0.55</sub>N / Al<sub>0.55</sub>Ga<sub>0.45</sub>N Quantum Wells”, 2009.
3. Yanhan Zhu, “Transmission characteristics of meter-long silica-on-silicon integrated-optic time delays”, 2009.
4. Ananth Krishnan, “Direct space-to-time pulse shapers using reflective arrayed waveguide gratings”, 2006.
5. Madhuri Nallabolu, “Three dimensional conductivity modulation in biocompatibly functionalized nanoengineered structures”, 2005.
6. Meetul Goyal, “None-linear control of micro-mirrors”, 2005.
7. Krishnakumar Venkitapathy, “Chip to chip optical interconnects”, 2004.
8. Yagya Narayanan Sethuraman, 2004.

Courses Taught

ECE 5381 – Intro Semiconductor Processing F’02, F’05, F’06, F’08, F’09, F’10, F’11  
 ECE 5387 (former ENGR 5362) – Advance Semiconductor Processing S’03, S’06, S’07, S’08, S’09, S’10, S’12  
 EE 6351 – Physical Electronics S’03  
 ECE 5314 – Solid State Devices F’03, F’04, F’11  
 EE 5321 – Design and Analysis of Analog Integrated Circuits S’09  
 EE 5332-06 – Electromagnetic Measurements for Semiconductors F’08  
 EE 5332-04 – Semiconductor Materials & Device Characterization F’09

***Undergraduate Education.***

Courses Taught

EE 3311 – Electronics I F’00, S’01, F’01, S’02  
 EE 2304/3302/3301 – Circuits F’01, F’03, F’04, S’05, F’05, S’06, F’06, F’07, S’08, F’08

EE 4381 – VLSI Processing F'02, F'05, F'06  
EE 4314 – Solid State Devices F'03, F'04, F'11  
EE 3312 – Electronics II S'04, F'08  
EE 4321 – Design and Analysis of Analog Integrated Circuits S'09  
EE 3341 – Electromagnetic Theory I, S'11

Undergrad Projects Lab Advisor F'00, S'01, F'01, S'02, F'02, S'03, F'03, S'04, F'04, S'05, F'05, S'06, F'06, S'07, F'07, S'08.

Undergraduate Research Projects Supervised

1. Mr. Jeremy Ward, “Hall measurements of AlGa<sub>N</sub> and Ga<sub>N</sub> and development of Ohmic contacts”, 2002.

**ECE TTU Services (Committees)**

- Circuits/Electronics 2000 – present
- Graduate Studies Committee 2002 – present
- Undergrad Advising ECE Committee 2009 – 2010
- Solar Energy Maddox Chair Advising Committee 2009 – 2010
- ETF Candidates Search Committee 2007 – 2008
- ECE Chair Search Committee 2006 – 2007
- Program for Semiconductor Product Engineering 2000 – 2007
- Undergraduate Committee 2000 – 2006
- Strategic Planning 2001 – 2006
- Budget 2004 – 2006
- Faculty Search Committee 2001 – 2002, 2008

**Journal and Proposal Reviewer**

- Reviewer for International and US National Conferences (Since 1996)
- Applied Physics Letters (Since 1999)
- Journal of Applied Physics (Since 2000)
- Journal of Vacuum Science and Technology (Since 2000)
- Physica Status Solidi (Since 2002)
- IEEE Photonics Technology Letters (Since 2004)
- Journal of Quantum Electronics (Since 2004)
- Solid-State Electronics (Since 2004)
- IEEE Transaction on Electron Devices (Since 2005)
- Material Science and Engineering (Since 2006)
- IEEE Control Systems Magazine (Since 2006)
- Solid State Communications (Since 2007)
- National Science Foundation – ECS proposal panel review (2004, 2006, 2009, 2010, 2011), DMR proposal online review (2006), NERC proposal panel review (2011).
- Online reviewer for United States-Israel Binational Science Foundation (2009)
- Journal of Material Science: Materials in Electronics (Since 2007)
- Optics Letters (Since 2008)
- Materials Chemistry and Physics (Since 2008)
- U.S. Civilian Research & Development Foundation – proposal panel review (2007, 2008)

## Research Publications and Citations

There are 1263 citations (without self-citation) for 107 peer-reviewed journal papers tracked from ISI Web of Knowledge (time span = 1997 – 2012, work at TTU; h-index = 20 for this time span).

All together, over 150 peer-reviewed journal and proceeding papers have been published in various areas of optoelectronics, semiconductor devices, and physics of semiconductors. Eighteen patents (17 foreign and 1 USA at TTU) have been awarded.

## Peer-reviewed journal publications (1997-2012, work at Texas Tech University)

### Published.

1. Rajanna G., Feng W., Sohal S., Kuryatkov V. V., **Nikishin S. A.**, Bernussi A. A, and Holtz M., “Temperature and excitation intensity dependence of photoluminescence in AlGa<sub>N</sub> quantum wells with mixed 2D-3D morphology”, *J. Appl. Phys.*, **110**, 073512 (2011).
2. Feng W., Kuryatkov V. V., **Nikishin S. A.**, and Holtz M., “Selective area epitaxy of InGa<sub>N</sub> quantum well triangular microrings with a single type of sidewall facets”, *J. Cryst. Growth*, **312**, 1777-1720 (2010).
3. Kuryatkov V. V., Feng W., Pandikunta M., Woo J. H., Garcia D., Harris H. R., **Nikishin S. A.**, and Holtz M., “Ga<sub>N</sub> stripes on vertical {111} fin facets of (110)-oriented Si substrates”, *Appl. Phys. Lett.*, **96**, 073107 (2010).
4. **Nikishin S.**, Borisov B., Pandikunta M., Dahal R., Lin J. Y., Jiang H. X., Harris H., and Holtz M., “High Quality AlN for Deep UV Photodetectors”, *Appl. Phys. Lett.*, **95**, 054101 (2009).
5. **Nikishin S.**, Chary I., Borisov B., Kuryatkov V., Kudryavtsev Yu., Asomoza R., Karpov S. Yu., and Holtz M., "Mechanism of carrier injection in (Ni/Au)/p-Al<sub>x</sub>Ga<sub>1-x</sub>N:Mg (0 ≤ x ≤ 0.1) ohmic contacts," *Appl. Phys. Lett*, **95**, 163502 (2009).
6. Holtz M. E., Gherasoiu I., Kuryatkov V., **Nikishin S. A.**, Bernussi A. A., and Holtz M. W., "Influence of phonons on the temperature dependence of photoluminescence in InN with low carrier concentration," *J. Appl. Phys.*, **105**, 063702 (2009).
7. Feng W., Kuryatkov V. V., Rosenblatt D. M., Stojanovic N., **Nikishin S. A.**, and Holtz M., "Diverse facets of InGa<sub>N</sub> quantum well microrings grown by selective area epitaxy," *J. Appl. Phys.*, **105**, 123524 (2009).
8. Alivov Y., Pandikunta M., **Nikishin S.**, and Fan Z. Y., “The anodization voltage influence on the properties of TiO<sub>2</sub> nanotubes grown by electrochemical oxidation”, *Nanotechnology* **20**, 225602 (2009).
9. Frisbie S. P., Krishnan A., Xu X., Grave de Peralta L., **Nikishin S. A.**, Holtz M. W, and Bernussi A. A., “Optical Reflectivity of Asymmetric Dielectric–Metal–Dielectric Planar Structures”, *J. Lightwave Technol.* **27**, 2964 (2009).
10. Chandolu A., Song D.Y., Holtz M. E., Gherasoiu I., **Nikishin S. A.**, Bernussi A., and Holtz M.W. “X-Ray diffraction and photoluminescence studies of InN grown by plasma-assisted molecular beam epitaxy with low free-carrier concentration”, *J. Electron. Mater.*, **38**, 557 (2009).
11. Chary I., Chandolu A., Borisov B., Kuryatkov V., **Nikishin S.**, and Holtz M., “Influence of surface treatment and annealing temperature on the formation of low resistance Au/Ni ohmic contacts to p-GaN”, *J. Electron. Mater.*, **38**, 545 (2009).
12. Song D. Y., Chandolu A., Stojanovic N., **Nikishin S. A.**, and Holtz M., “Cathodoluminescence spectrum image study of Ga<sub>N</sub> pyramids grown by selective area epitaxy”, *J. Appl. Phys.*, **104** 064309 (2008).
13. Song D. Y., Holtz M. E., Chandolu A., Bernussi A., **Nikishin S. A.**, Holtz M. W., and Gherasoiu I., “Effect of stress and free-carrier concentration on photoluminescence in InN”, *Appl. Phys. Lett.*, **92**, 121913 (2008).

14. Feng W., Kuryatkov V., Chandolu A., Song D. Y., **Nikishin S. A.**, and Holtz M., "Green light emission from InGaN multiple quantum wells grown on GaN pyramidal stripes using selective area epitaxy", *J. Appl. Phys.*, **104**, 103530 (2008).
15. Gherasoiu I., O'Steen M., Bird T., Gotthold D., Chandolu A., Song D. Y., Xu S. X., Holtz M., **Nikishin S. A.**, and Schaff W. J., "Characterization of high quality InN grown on production-style plasma assisted molecular beam epitaxy system", *J. Vac. Sci. Technol. A*, **26**, 399 (2008).
16. **Nikishin S. A.**, Borisov B. A., Kuryatkov V. V., Holtz M., Garrett G. A., Sarney W. L., Sampath A. V., Shen H., and Wraback M., "Effect of growth mode on the luminescence properties of AlGaIn quantum structures", *Jap. J. Appl. Phys.*, **47**, 1556 (2008).
17. Song D. Y., **Nikishin S. A.**, Holtz M., Soukhoveev V., Usikov A., and Dmitriev V., "Decay of Zone-Center Phonons in GaN with  $A_1$ ,  $E_1$ , and  $E_2$  Symmetries," *J. Appl. Phys.* **101**, 053535 (2007).
18. Lopatiuk-Tirpak O., Chernyak L., Borisov B. A., Kuryatkov V. V., and **Nikishin S. A.**, "Electron Irradiation-Induced Increase of Minority Carrier Diffusion Length, Mobility, and Lifetime in Mg-doped III-N Superlattice/GaN Structure", *Appl. Phys. Lett.*, **91**, 182103 (2007).
19. Chandolu A., **Nikishin S.**, Holtz M., and Temkin H., "X-ray diffraction study of AlN/AlGaIn short period superlattices", *J. Appl. Phys.*, **102**, 114909 (2007).
20. Dudelev V. V., Sokolovskii G. S., Losev S. N., Deryagin A. G., Kuchinskii V. I., **Nikishin S. A.**, Holtz M., Rafailov E. U., and Sibbett W., "Phase effects in broad-area heterolasers with curved grooves of distributed feedback grating", *Tech. Phys. Lett.*, **33**, 292 (2007).
21. Kuryatkov V. V., Borisov B. A., **Nikishin S. A.**, Kudryavtsev Yu., Asomoza R., Kuchinskii V. I., Sokolovskii G. S., Song D. Y., and Holtz M., "247 nm solar-blind ultraviolet *p-i-n* photodetector", *J. Appl. Phys.*, **100**, 096104-06 (2006).
22. Song D. Y., Basavaraj M., **Nikishin S. A.**, Holtz M., Soukhoveev V., Usikov A., and Dmitriev V., "The Influence of Phonons and Phonon Decay on the Optical Properties of GaN", *J. Appl. Phys.* **100**, 321620-1-3 (2006).
23. Aurongzeb D., Basavaraj M., Bhargava Ram K., Kipshidze G., Yavich B., **Nikishin S. A.**, Temkin H., and Holtz M., "Formation of Nickel Nanodots on GaN", *J. Appl. Phys.* **99**, 014308-1-4 (2006).
24. Guryanov G., Clair T.P. St., Bhat R., Caneau C., **Nikishin S.**, Borisov B., and Budrevich A., "SIMS quantitative depth profiling of matrix elements in semiconductor layers", *Appl. Surface Sci.*, **252**, 7208-7210 (2006).
25. Song D. Y., Kuryatkov V., Basavaraj M., Rosenblatt D., **Nikishin S. A.**, Holtz M., Syrkin A. L., Usikov A. S., Ivantsov V. A., and Dmitriev V. A., "Morphological, Electrical, and Optical Properties of InN Grown by Hydride Vapor Phase Epitaxy on Sapphire and Template Substrates", *J. Appl. Phys.*, **99**, 116103-1-3 (2006).
26. Song D. Y., Holtz M., Chandolu A., **Nikishin S. A.**, Mokhov E. N., Makarov Yu., and Helava H., "Optical Phonon Decay in Bulk AlN", *Appl. Phys. Lett.*, **89**, 021901-1-3 (2006).
27. Yun J., Choi K., Mathur K., Kuryatkov V., Borisov B., Kipshidze G., **Nikishin S.**, and Temkin H., "Low resistance Ohmic contacts to digital alloys of n-AlGaIn/AlN", *IEEE Electron Device Lett.* **27**, 22 – 24 (2006).
28. Borisov B. A., **Nikishin S. A.**, Kuryatkov V. V., Kuchinski V. I., Holtz M., and Temkin H., "Enhanced Radiative Recombination in AlGaIn Quantum Wells Grown by Molecular-Beam Epitaxy", *Semiconductors*, **40**, 454–458 (2006), Original Russian Text in Borisov B.A, **Nikishin S. A.**, Kuryatkov V.V., Kuchinski V.I., Holtz M., and Temkin H., published in *Fizika i Tekhnika Poluprovodnikov*, **40**, 460–463 (2006).
29. Borisov B., **Nikishin S.**, Kuryatkov V., and Temkin H., "Enhanced Deep UV Luminescence from AlGaIn Quantum Wells Grown in 3D Mode," *Appl. Phys. Lett.*, **87**, 191902 (2005)
30. Borisov B., Kuryatkov V., Kudryavtsev Yu., Asomoza R., **Nikishin S.**, Holtz M., and Temkin H., "Si-doped  $Al_xGa_{1-x}N$  ( $0.56 \leq x \leq 1$ ) layers grown by molecular beam epitaxy with ammonia," *Appl. Phys. Lett.*, **87**, 132106-08 (2005).



31. Gherasoiu I., **Nikishin S.**, and Temkin H., "Growth Model for Metalorganic Molecular Beam Epitaxy of GaN," *J. Appl. Phys.*, **98**, 053518 (2005).
32. **Nikishin S.**, Holtz M., and Temkin H., "Digital Alloys of AlN/AlGaIn for Deep UV Light Emitting Diodes," *Jpn. J. Appl. Phys.*, **44**, 7221 – 7226, special issue "Selected Topics in Applied physics III" (2005).
33. Kuryatkov V., Borisov B., Saxena J., **Nikishin S. A.**, Temkin H., Patibandla S., Menon L., and Holtz M., "Analysis of non-selective plasma etching of AlGaIn by CF<sub>4</sub>/Ar/Cl<sub>2</sub>," *J. Appl. Phys.*, **97**, 073302 (2005).
34. Zhu K., Kipshidze G., Kuryatkov V., Borisov B., Yun J., **Nikishin S. A.**, Temkin H., Ramkumar C., and Holtz M., "Evolution of surface roughness of AlN and GaN induced by inductively coupled Cl<sub>2</sub>/Ar plasma etching," *J. Appl. Phys.*, **95**, 4635 (2004).
35. **Nikishin S. A.**, Borisov B. A., Chandolu A., Kuryatkov V. V., Temkin H., Holtz M., Mokhov E. N., Makarov Yu., and Helava H., "Short period superlattices of AlN/Al<sub>0.08</sub>Ga<sub>0.92</sub>N grown on AlN substrates," *Appl. Phys. Lett.*, **85**, 4355 (2004).
36. Gherasoiu I., **Nikishin S.**, Kipshidze G., Borisov B., Chandolu A., Ramkumar C., Holtz M., and Temkin H., "Growth mechanism of AlN by metal-organic molecular beam epitaxy," *J. Appl. Phys.*, **96**, 6272-6276 (2004).
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