

# Arup Neogi

## Present Position : Professor, Department of Physics, University of North Texas

University of North Texas, Denton, TX, 76203; Email: [arup@unt.edu](mailto:arup@unt.edu), Phone: 940-231-9834

**Lady Davis Professor**, Hebrew University, Jerusalem

**Adjunct Professor**, Institute of Frontier and Fundamental Sciences, University of Engineering Science and Technology, Chengdu, China

**Visiting Professor**, Faculty of Interdisciplinary Sciences, Shimane University, Matsue, Japan

**Affiliate Faculty**: Department of Material Science and Engineering, University of North Texas

## Research Interests

**Nanophotonics, Biophotonics, Nanofabrication, High Speed Optoelectronics** including Quantum Dots, Plasmonic Nanomaterials, Nonlinear Optical imaging, Ultrafast Optical Spectroscopy of III-V Semiconductor Heterostructures, Layered organic-inorganic perovskites, ZnO photonics, combining nanofabrication tools with nanoscale optical characterization

## Professional experience

2008-contd.	<b>Professor</b> , University of North Texas, Denton, Texas, USA, UESTC, China
2002-2008	<b>Associate Professor</b> , University of North Texas, Denton, Texas, USA
2000 - 2002	<b>National Research Council Senior Research Fellow</b> , Duke University/ US Army Research Laboratory, Durham, USA
1997 – 2000	<b>Industrial Technology Researcher</b> , Femtosecond Technology Research Association, Tsukuba, Japan,
1994 – 1996	<b>Japan Society for Promotion of Sciences Visiting Scientist</b> , Yamagata University, Yamagata, Japan
1992 - 1993	<b>Postdoctoral Researcher</b> , D.A. University/Calcutta University, India

## Education

1999	<b>Doctor of Engineering in Electrical &amp; Information Engineering, Yamagata University, Yamagata, Japan</b> <i>Thesis: Ultrafast All-Optical Modulation and Nonlinear Frequency Generation of near-Infrared light by Intersubband transitions in Semiconductor Quantum Wells</i>
1988-92	<b>Doctor of Philosophy in Physics, Vikram University, Ujjain, M.P., India</b> <ul style="list-style-type: none"><li>• Thesis: <i>Nonlinear Effects in Semiconductor Plasmas</i></li></ul>
1986-88	<b>Master of Science in Applied Physics, Government Engineering College, India</b> <ul style="list-style-type: none"><li>• Thesis: Game theory via Visual graphics using Basic Programming</li></ul>
1982-1986	<b>Bachelor of Sciences, R.D. Univ., Jabalpur, India</b>

## Patents, Research Publication and Citations

- Over 200 research articles in journals, proceedings and books
- Over 80 Invited lectures in international and national Conferences, Colloquia
- Over 3000 citations; 2 Patents based on acoustic materials.
- H-Index # 30
- Doctoral Students graduated until 2017: *Fifteen*

## Research Grants:

- Current grants
  1. NSF EFRI: GOALI: EFRI NewLaw: Non-reciprocal effects and Anderson localization of acoustic and elastic waves in periodic structures with broken P-symmetry of the unit cell; 11/2017-10/2021 \$1,997,222.00;
  2. Metamaterial based ultrasonic imaging; Institute of Frontier and fundamental sciences, China; 04/2015-03/2018; \$ 120,000
  3. AMMPI Seed funds on International Research Experience for Student on Additive Manufacturing; 02/2018-08/2018; \$ 15,000
  4. UNT- R. Center for Advanced Technology, Indore, India, 05/2017-04/2018; \$ 6000

## Academic Awards:

- Lady Davis Professorship, Hebrew University, Israel, 2017-2018
- Fellow of Optical Society for America, 2017
- Distinguished Lecturer, Japan Women's University, 2014
- Department of Education of China Foreign Scholarship, 2014
- Distinguished Lecturer, Japan Women's University, 2011
- Global Visiting Fellow at Center of Excellence- University of Tokyo, Japan, 2010
- Japan Society for Promotion of Sciences Invitational Scholarship, 2006
- MRS Trophy Award in Molecular Electronics, 2005
- President of the USA -JSPS Association 2006-2008
- Member of Texas-Shimane Nanotechnology Industrial Forum
- National Research Council, Senior Research Fellow, 2000.
- Japan Society for Promotion of Science's Postdoctoral Scholarship, JAPAN, 1995.
- Monbusho Postdoctoral Fellowship, Ministry of Education, Culture & Science, JAPAN, 1994.
- Indian Science Congress Association Young Scientist Award, Calcutta, INDIA, 1991
- University Gold Medal in the Applied Science Division, R.D. Univ., Jabalpur, INDIA, 1988.
- Central India Young Scientist Award, M.P. Council of Science & Technology, INDIA, 1990.
- Prof. Narayan Singh Award, Science Center Gwalior, INDIA 1990.
- Senior Research Fellowship, Council of Scientific & Industrial Research, INDIA, 1990.

## Patents

Dates	Title	Country	Owners
2013.6.13	Methods and devices for electromagnetically tuning acoustic media	US PTO	Arup Neogi, Ezekiel Walker
2014.3.16	Tunable Polymer-based sonic structures	US PTO	Ezekiel Walker, Arup Neogi, Tong Cai

## Administrative Positions held in the past 5 years

- International Evaluation Committee member of Chinese Ministry of Education
- Chair of US Japan Society for Promotion of Sciences (2006-2010)
- Chair and co-Chair of Several International Conferences
- Member of NanoPhotonics/Biophotonics Cluster at University of North Texas (2007-2012.)
- Member of Texas-Japan Joint Committee on Nanotechnology 2005-continued
- Advisory board member of International Center for Nanotechnology Network, NIMS, Japan (2007-)
- Member of Steering Committee for Nanofabrication facilities at University of North Texas 2008-09
- Search Committee member; Condensed Matter Physics Group (2006)
- Member of the Physical Facilities Committee (2003-2007)
- Member of Graduate Committee (2004-2011) (2014-2016)
- Member of the Departmental Executive Committee (2003-05) (2006-07) (2014-2016)
- Member of the Departmental Personnel Committee (2010-2013)

## Laboratory Facilities developed at University of North Texas

Three-major optical and electronic characterization facilities worth more than 1.5 Million dollars and one device modeling computational facilities was developed with support from DoD, NSF, DOE, UNT Internal grants. Some of these projects are in collaboration with Departments of Chemistry and Engineering Technology.

### 1. Ultrafast Optics Laboratory:

#### *Laser Sources:*

- A tunable femtosecond laser system -(300 nm - 16 mm) That includes: Diode pumped Nd:YLF laser as a pump source, a 1 kHz 2.5 mJ Femtosecond Regenerative Amplifier, a Fiber laser (@ 800 nm) as the seed source, a Femtosecond optical parametric amplifier (300 nm - 16 mm).
- Tunable femtosecond Optical Parametric Oscillator – Spectra Physics OPAL (1.1 -2.6 micron)
- A femtosecond Oscillator with doubler and tripler (Spectra-Physics Mai-Tai) (240 nm – 2.6 micron)
- UV-Visible Argon Laser, CW He-Cd Laser 25mW, He-Ne Lasers (10 mW), GaN Laser Diodes (5 mW)

#### *Detectors:*

- Cooled CCDs, and Streak Camera for UV-Visible Ultrafast optical spectroscopy, InGaAs, PbS, HgCdTe detectors
- Liquid Helium and liquid nitrogen cryogenic facilities for low temperature measurements

Experiments include temperature and time-resolved photoluminescence and absorption spectroscopy, differential transmission spectroscopy, photoluminescence emission spectroscopy

### 2. Nanophotonics Laboratory:

- Near-field Optical Microspectrophotometer (JASCO NFS-330T System) established using the NSF-MRI instrumentation grant.
- Temperature dependent near-field optical spectroscopy upto Liquid Helium temperatures.

The availability of Ultrafast Spectroscopy for nanoscale materials beyond the diffraction limit using near-field optical spectroscopy at 4.2 K is unique. To the best of our knowledge, there are no such facilities available in the United States for the UV-Visible region.

### 3. Raman Spectroscopy Laboratory

- UV-Visible Confocal Micro-Raman Spectroscopy system (JY- T64000 CCD based imaging system) for material characterization
- Sources include HeCd laser, Intra-cavity double Argon Ion laser.

### 4. Device Fabrication and characterization :

- Over 50 sq ft of a class 100 clean room with wet bench/fume hoods for sample preparation, metallization facilities, etching, electrical device fabrication etc.
- Photocurrent and IV-measurement system.
- Hydrogel synthesis station, Microfluidic and Biomemetics using nanoparticle doped hydrogel

### 5. Device Modeling Laboratory

- Dell Main Frame system with optoelectronic and photonic device software such as RSoft, EM Photonics Laboratory, MIT- MPB package for the design and modeling of Photonic Crystals.
- Includes both Windows and LINUX based Operating System
- Overall instrumentation exceeds \$ 1,500,000 excluding building infrastructures which has all been assembled since 2003.

## Cleanroom related experiences:

### 1. **Industrial Technology Researcher at the** Femtosecond Technology Research Association Laboratories, Tsukuba, Japan (1997-2000)

Nanofabrication, design and characterization of heteroepitaxial semiconductor for all-optical switching, Hands on Experienced in

- Molecular beam epitaxy,
- Electron beam deposition, Sputter deposition, electron beam deposition
- Semiconductor laser waveguide device fabrication, using chemical etching, mechanical polishing and RIE
- Photolithography for microelectronics and photonics

### 2. **National Research Council Senior** Fellow at Duke University, North Carolina

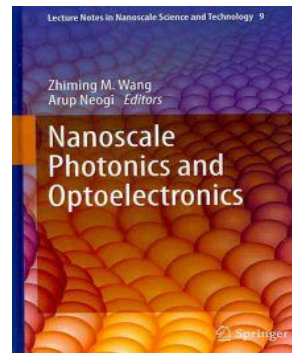
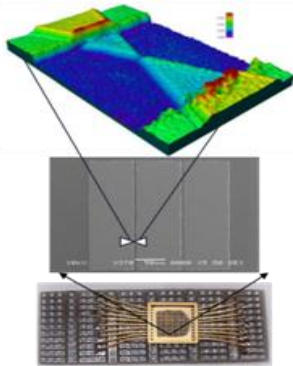
Design and simulation of nitride based optoelectronic devices including LEDs, HEMTs

- Wire bonding
- Metal vapor deposition of noble metal for plasmonic emitters
- IV-CV measurement of GaN LEDs and laser diodes
- Synthesis of Quantum dots using MBE at Virginia Commonwealth University

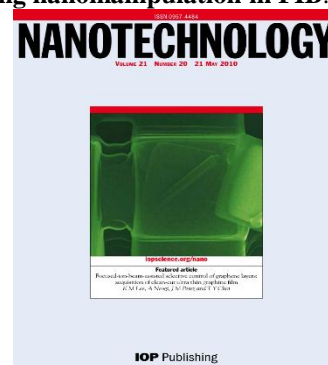
### 3. **Associate Professor**, University of North Texas

*Nanoscale Design, Fabrication and characterization of DNA based Biomolecular nanowire as detectors*

- Electron beam lithography for the design of DNA Chip with bow-tie electrodes with gap of 60 nm (paper published in Applied Physics Letters, Electronic Letters and IEEE Journal of Lightwave Technology- Received the MRS Best paper award as a recognition for this work



**Design, Fabrication and Characterization of Graphene sheets using nanomanipulation in FIB.**



### 4. **Professor**, University of North Texas

**Proposed the basic concept of Bio-nanophotonics clusters with clean room capability** to the UNT administration which was accepted.

- \* Worked closely with the VPR office to strategically develop the cleanroom facilities at UNT
- \* Member of the design of cleanroom team, including the range, capabilities and research thrusts
- \* Member of three member cleanroom infrastructure team-negotiated the purchase of the lithography tools, JEOL, Heidelberg, metal deposition systems
- \* Was a member of search committee in the Department of Physics to hire faculty with expertise in cleanroom operations

**Advisory board member of International Center for Nanotechnology Network, NIMS, Japan (2007-)**

Designed photonic crystals which was realized at NIMS as a part of NSF funded US-Japan bilateral project.

**Member of Industrial team of Texas-Shimane (Japan) Nanotechnology Advancement Team**

## Graduate Students

### Students Graduated (16):

1. Padmarekha Vemuri  
Ph.D (Eng. Tech.) (2005)  
*"Engineering spontaneous emission in semiconductor nanostructures using photonic crystals"*
2. Harsheetal Liddar  
M.S. Engineering Tech. (2005)  
*"Bioconjugation of Self-assembled guanosine to GaN nanostructures"*
3. David McNeal  
(Ph.D Physics, 2005)  
*"Effect of Anisotropy on Plasmonic Structures"*
4. Jianyou Li  
(Ph.D. in Physics, 2008)  
*"Hybrid Molecular Photonic device using Nitride based Self-Assembled Guaninosine"*
5. Brett Garner  
(Ph.D. in Physics, 2008)  
*"Design and Fabrication of Tunable Photonic Crystal"*
6. Sween John  
M.S. Engineering Tech (2009)  
*"Optical Properties of ZnO conjugated to hydrogel bioconjugates"*
7. Kyung-min Lee  
(Ph.D. in Physics, 2010)  
*"Nanoscale materials applications: thermoelectrical, biological, and optical applications with nanomanipulation technology"*
- 8 Antonio Llopis  
(Ph.D in Physics 2012)  
*"Electrostatic effect in the enhancement of photoemission in metal-InGaN/GaN semiconductor quantum wells."*
9. Karol Grycznski  
(Ph.D. in Physics, 2012)  
*"Electrostatic Image Charge effect in GaAs/AlGaAs quantum wells"*
10. Meg Mahat  
(Ph.D. in Physics, 2012)  
*"Ultrafast Carrier Dynamics in Hybrid InGaN/GaN Quantum wells"*
11. Akhilesh Singh  
(Ph.D. in Physics, 2012)  
*"Light emission in metal implanted Silicon nanocrystals"*
12. Ben Urban  
(Ph.D. in Physics, 2013)  
*"Bioimaging and biomedical engineering using ZnO nanoparticles"*
- 13.. Jie Lin  
(Ph.D. in Physics, 2014)  
*"Nonlinear Plasmonics in ZnO nanoparticles"*
14. Ezeikel Walker  
(Ph.D. in Physics, 2014)  
*"Hybrid tunable Phononic crystals for multifunctional application"*
15. Sanjay Karna  
(PhD in MSE, 2016)  
*"Graphene based plasmonic light emitters"*
16. Sween John Butler  
(Ph.D. in Physics, 2017)  
*"Nonlinear optical effect in GaN microstructures"*

### Current students:

1. Yuba Podel  
(for Ph.D. in Physics)  
*"2D semiconductor based plasmonic light emitters"*
2. Brian Squires  
(for Ph.D. in Physics)  
*"Nonlinear non-reciprocal optical effects in GaN nanostructures"*

## Post Doctoral Fellows mentored : (Ten)

1. **Dr. Vasistha D'Silva (2018-current)**
2. **Dr. Ezekiel Walker (2014- current)**
3. **Dr. Heynou Ho (2018-current)**
4. **Dr. Meg Mahat (2014-2017)**
5. **Dr. Delfino Reyes (2014-2016)**
6. **Dr. Surendra Rajpurohit (2011-2012) Currently a Post-doctoral fellow at Georgia Medical**
7. **Dr. Mamta Sharma (2011-2012) Post-doctoral fellow in Hybrid materials, CSIR, India**
8. **Dr. Shantaneel Ghosh (2006-2007)**– He was a JI exchange Scholar working on microfluidic channels. Dr. Ghosh is presently an Assistant Professor at Southwest Missouri State University, MO, USA
9. **Dr. Anju Sharma (2003-2005)**- is presently a Scientist at Nanotechnology Center, SUNY, USA
10. **Dr. Jianyou Li (2007-2008)**- He is presently a Senior Engineer at Evans Analytical, CA, USA

## Student Achievements:

**Prachi Thapar (2011)- Semi Finalist Intel Talent Search Competition;** She was a TAMS student currently in Washington University.

**Antonio Llopis (2010)- Received the Best poster award** at the 5th International Nano-Photonics Conference, Tsukuba, Japan.

**Tony Llopis (2006-09):** received the first College of Arts and Sciences Graduate Research Fellowship among the Sciences Departments.

**David McNeal (2006):** is the first UNT graduate student to be selected as an NSF -EAPSI fellow to travel to University to Tsukuba in 2006.

**Jianyou Li (2005)-** Our groups work on molecular electronics which was presented in the MRS meeting in 2005 received the **MRS Trophy award** for the best manuscript.

**Nine IRES Fellows:** Brett Garner, Tony Llopis, Ezekiel Walker, Sween John, Karol Gryczynski, and Ben Urban, Prachi Thapar, Kyle Main, Samudyatha Chakki to Japan under the IRES program to perform research related to their Doctoral or Master thesis.

## Book :

**Nanoscale Photonics and Optoelectronics, Z. Wang and A. Neogi, Springer (2010).**

### Book Chapters

1. “*Optical Characterization of GaN Quantum Dots grown by Molecular Beam Epitaxy*”, in *Nitride and Wide bandgap Semiconductors for sensors, photonics and electronics*, Eds. R. E. Kopf, A.G. Baca, S.J. Pearton, and F. Ren, 2003, pg 181. *Electrochemical Society*
2. “*All Optical Switching using intersubband transition in antimonide based quantum well system*”, in *Intersubband Device Physics*, Eds. R. Paiella and F. Cappasso, McGraw Hill (2005)
3. “*Unique Properties of Optical Near Field and their Applications to Nanophotonics*” by T. Kawazoe, K. Kobayashi, S. Sangu, M. Ohtsu, A. Neogi, in “*Progress in Nano-Electro-Optics*” *Springer Tracts in Optics* (2006), Pgs 109-159.
4. “*All-Optical Modulation and Switching Devices*”, by A. Neogi in *Advanced Optics Series* Ed P. Bhattacharya, (2013), [To be published]
5. “*Self-assembled Guanosine based Nanoscale photonic devices*, J. Li, H. Morkoc, A. Neogi, pp 78-100, *Lecture Notes in Nanoscale Science and Technology*; (2010); Ed. Z. Wang and A. Neogi, Springer.
6. “*Field Emission Properties of ZnO, ZnS and GaN nanostructures*”, Y. Mo, J.J. Schwartz, M.H. Lynch, P.A. Ecton, A. Neogi, J. Perez, y. Fujita, N.J. Ho, pp 157-218, *Lecture Notes in Nanoscale Science and Technology*; (2010); Ed. Z. Wang and A. Neogi, Springer.

## Accreditations

- Marquis Who's Who in the World (Since '96)
- International Who's Who of Professionals (Since '97)
- American Bibliographic Society (2000)
- **Chair and Organizer of UNT-JSPS International Meeting Series 2006- 2010**
- Organizing Chair of Energy Nano Materials Conference Series in USA 2007-2016
- Organizing Committee Member of Semiconductor and Insulating Materials Conference.

## Cross-disciplinary Research Efforts

- NSF-Major Research Instrumentation Project – Establishment of Nanophotonics Laboratory -07
- Member of the ***Advanced Manufacturing and Materials Processing Institute***
  - Nanoscale (sub-wavelength) device fabrication using focused ion-beam lithography,
  - Material characterization using Scanning Electron Microscopy and Transmission Electron Microscope
- Member of the ***Raman Spectroscopy Center at UNT*** with Department of Chemistry at UNT
  - UV-Visible Raman Spectroscopy of Hybrid Semiconductor material for photonic application
- Initiated a ***Biophotonics research program*** in collaboration with UT South Western, UT Medical Branch at Galveston, Northwestern University, Biomedical Engineering
  - ***DNA based nanophotonic sensors, Cancer cell imaging, Drug delivery, Cardiovascular Sensor***
- Industrial collaborations: Alcatel Lucent Bell Laboratories, Dow Chemicals, Echonovus Inc.

## Recent Publications: (2017-2011)

1. "*Gold Nanoparticles-enabled Efficient Dual Delivery of Anticancer Therapeutics to HeLa Cells*" Muhammad U. Farooq, Valentyn Novosad, Elena A. Rozhkova, Hussain Wali, Asghar Ali, Ahmed A. Fateh, Purnima B. Neogi, Arup Neogi and Zhiming Wang; Scientific Reports, 8, doi:10.1038/s41598-018-21331-2
2. "*Plasmonically Induced Transparency in Graphene Oxide Quantum Dots with Dressed Phonon States*", M. Mahat, Y. Rostovtsev, S. Karna, G. N. Lim, F. D'Souza, and A. Neogi, ACS Photonics; Article ASAP; DOI: 10.1021/acsp Photonics.7b01188 [November 27, 2017]
3. "*Hyperspectral Nonlinear Optical Light Generation from a Monolithic GaN Microcavity*", S. Butler, H. Jiang, J. Lin, A. Neogi; Advanced Optical Materials, (2017) DOI: 10.1002/adom.201600804
4. "Radio-frequency actuated polymer based phononic meta-materials for control of ultrasonic waves", E. Walker, Z. Wang, A. Neogi, Nature Asia Materials 9, e00; doi:10.1038/am.2016.209 (2017)
5. "*Laser ablated carbon nanodots for light emission*" D. Reyes, M. Camacho, M. Camacho, M. Mayorga, E. Viguera, D. Weathers, G. Salamo, Z. Wang and A. Neogi, Nanoscale Research Letters, 11, 424 (2016) DOI: 10.1186/s11671-016-1638-8
6. "*Competition Between Resonant Plasmonic Coupling and Electrostatic Interaction in Graphene Oxide Quantum Dots*" S. Karna, M. Mahat, T. Choi, R. Shmada, Z. Wang, A. Neogi, Scientific Reports (2016) Scientific Reports 6, 36898 (2016) doi:10.1038/srep36898
7. "*Metallic Nanodroplet Induced Coulomb Catalysis for Off-Resonant Plasmonic Enhancement of Photoemission in Semiconductors*", ACS Omega, 1, 19-28 (2016)
8. "*Origin of broad band emissions of 3C-silicon carbide nanowire by temperature and time resolved photoluminescence study*", K.M Lee, J.Y Hwang, B. Urban, A Singh, A. Neogi, S.K. Lee, T.Y. Choi, Solid State Communications 204, 16-18 (2015)
9. "*Co-existence of harmonic generation and two-photon luminescence in selectively grown coaxial InGaN/GaN quantum wells on GaN pyramids*", Sween Butler ; Mohamed Fikry ; Manfred Madel ; Klaus Thonke ; Arup Neogi, Proc. SPIE 9347, Nonlinear Frequency Generation and Conversion: Materials, Devices, and Applications XIV, 93470V (February 27, 2015); doi:10.1117/12.2079855
10. "*Saturation of two photon emission in ZnO nanoparticles with second order nonlinearity*", J. Lin, Y. Fujita, A. Neogi, RSC Advances, 5, 10921 - 10926, (2015)

11. "Tunable ultrasonic phononic crystal controlled by infrared radiation" Ezekiel Walker, Delfino Reyes, Miguel Mayorga Rojas, Arkadii Krokhin, Zhiming Wang, and Arup Neogi" *Appl. Phys. Lett.* 105, 143503 (2014);
12. "Plasmonic modification of electron-longitudinal-optical phonon coupling in Ag-nanoparticle embedded InGaN/GaN quantum wells"; Antonio Llopis, Sérgio M. S. Pereira, Ian M. Watson and Arup Neogi; *Appl. Phys. Lett.* 105, 091103 (2014);
13. "Comparison of electrostatic and localized plasmon induced light enhancement in hybrid InGaN/GaN quantum wells" ; Jie Lin, Antonio Llopis, Arkadii Krokhin, Sergio Pereira, Ian M. Watson and Arup Neogi; *Appl. Phys. Lett.* 104, 242106 (2014);
14. "Surface plasmon enhancement of broadband photoluminescence emission from graphene oxide"; Arup Neogi, Sanjay Karna, Rakesh Shah, Ryoko Shimada, Jose Perez, Zhiming Wang, *Nanoscale*; 6, 11310 - 11315; (2014)
15. "Electrostatic mechanism of strong enhancement of light emitted by semiconductor quantum wells", A. Llopis, J. Lin, S. M. S. Pereira, T. Trindade, M. A. Martins, I. M. Watson, A. A. Krokhin and A. Neogi; *Phy. Rev. B.*, 87, 201304(R) (2013)
16. "Colloidal ZnO nanoparticles for nonlinear optical probes and selective cell destruction" Ben E. Urban ; Purnima Neogi ; Yasuhisa Fujita ; Arup Neogi; *Proc. SPIE 8595, Colloidal Nanocrystals for Biomedical Applications VIII, 85950M* (February 22, 2013); doi:10.1117/12.2005938
17. "Enhanced photoluminescence emission from anthracene-doped polyphenylsiloxane glass" Megumi Kimura, Naoki Tarutani, Masahide Takahashi, Sanjay Karna, Arup Neogi, and Ryoko Shimada, *Optics Letters*, Vol. 38, Issue 24, pp. 5224-5227 (2013) <http://dx.doi.org/10.1364/OL.38.005224>
18. "Energy transfer induced enhancement of localized exciton emission in ZnO nanoparticle–anthracene hybrid films", Kyle Main, Ryoko Shimada, Yasuhisa Fujita, Arup Neogi, Vol. 7, Issue 12, pp. 1089–1092, December 2013 DOI: 10.1002/pssr.201308114
19. "Ion beam synthesis and carrier dynamics of ZnO nanoparticles embedded in a SiO<sub>2</sub> matrix", B. Pandey, P. R. Poudel, A. K. Singh, A. Neogi, D. L. Weathers, "Applied Physics A, Volume 112, Issue 3, pp 801-806, September 2013
20. "Anomalous temperature dependence of speed of sound of bulk poly(N-isopropylacrylamide) hydrogels near the phase transition" Ezekiel Walker, Delfino Reyes, Arkadii Krokhin, Arup Neogi; *Ultrasonics*, (2014) <http://dx.doi.org/10.1016/j.ultras.2014.01.014>
21. "Low-Temperature Synthesis of Fe-Doped ZnO Nanotubes", G. Sapkota, K. Gryczynski, R. Mcdougald, A. Neogi, U. Philipose, *Journal of Electronic Materials*, Volume 41, pp 2155-2161 (2012)",
22. "Carrier induced nonlinearities in InGaN/GaN quantum wells with V-pits", M. Mahat, A. Llopis, R. D. Schaller, I. Watson, S. Periera and A. Neogi, *MRS Communications*, 2, 55-60 (2012).
23. "Origin of room temperature broadband light emission and carrier dynamics in Ag ion-implanted Silicon nanocrystals", A. K. Singh, K. G. Gryczynski, and A. Neogi, *Opt. Mat. Express*, 2, 501 (2012)
24. "Energy transfer in ZnO-anthracene hybrid structure", R. Shimada, B. Urban, M. Sharma, A. Singh, V. Avrutin, H. Morkoç, and A. Neogi, *Optical Materials Express*, 2, 526 (2012)
25. "Optimization of Nonlinear Optical Properties of ZnO nanoparticles for Live Cell Imaging", B. E. Urban, P. B. Neogi, S.R. Purohit, P. Jagadishwaran, Y. Fujita, A. Neogi, *IEEE J. Spec. Topic in Quantum Electron*, (2012) 10.1109/JSTQE.2012.2184793
26. "Second harmonic imaging of plants tissues and cell implosion using two-photon process in ZnO nanoparticles" B. E. Urban, P. B. Neogi, S. J. Butler, Y. Fujita, A. Neogi, *J. Biophotonics*, 5, 21, (2012) DOI 10.1002/jbio.201100076 (Cover page)
27. "Image-charge induced Enhancement of Light Emission in Metal-ion Implanted Si nanoparticles", A. Neogi, A. Singh, *Appl. Phys. Lett.* 14, 786 (2012)
28. "Carrier induced nonlinearities in InGaN/GaN quantum wells with V-pits", M. Mahat, A. Llopis, R. D. Schaller, I. Watson, S. Periera and A. Neogi, *MRS Communications*, 2, 55-60 (2012).
29. "Resonant plasmonic and electrostatic interactions in Ga nanodroplet capped GaN/InGaN Quantum Well" K. Gryczynski, J. Lin, H. Everitt, T. Ho, Kim, A. Brown, A. Neogi, *Nanotechnology* (2012) {In press}
30. "Origin of room temperature broadband light emission and carrier dynamics in Ag ion-implanted Silicon nanocrystals", A. K. Singh, K. G. Gryczynski, and A. Neogi, *Opt. Mat. Express*, 2, 501 (2012)



31. "Energy transfer in ZnO-anthracene hybrid structure", R. Shimada, B. Urban, M. Sharma, A. Singh, V. Avrutin, H. Morkoç, and A. Neogi, *Optical Materials Express*, **2**, 526 (2012)
32. "Optimization of Nonlinear Optical Properties of ZnO nanoparticles for Live Cell Imaging", B. E. Urban, P. B. Neogi, S.R. Purohit, P. Jagadishwaran, Y. Fujita, A. Neogi, *IEEE J. Spec. Topic in Quantum Electron*, (2012) [10.1109/JSTQE.2012.2184793](https://doi.org/10.1109/JSTQE.2012.2184793)
33. "Second harmonic imaging of plants tissues and cell implosion using two-photon process in ZnO nanoparticles" B. E. Urban, P. B. Neogi, S. J. Butler, Y. Fujita, A. Neogi, *J. Biophotonics*, **5**, **21**, (2012) DOI 10.1002/jbio.201100076 (**Cover page**)
34. "Influence of localized electric field on the bandedge emission of hybrid Au-GaN/InGaN quantum wells", K. G. Gryczynski, P.Vemuri, I. Watson, A. Neogi, *Appl. Phys. Lett.*, **99**, 121905 (2011).
35. "Optimization of nonlinear optical properties of ZnO micro and nanocrystals for biophotonics", B. E. Urban, J. Lin, Os Kumar, K. Senthilkumar, Y. Fujita, A. Neogi, *Optical Mat. Express*, **1**, 658 (2011)
36. "Optics in the nanoscale limit for optoelectronics and biophotonics", A. Neogi, *Proc. SPIE "Optics in Industry"* **8287**, 828701-928711 (2011).
37. "Broad band light emission from Ag-ion implanted silicon nanocrystals", A. K. Singh, K. G. Gryczynski, S. Y. Park, M. Kim and A. Neogi, *Solid State Comm.* **151**, 1405-1409 (2011)
38. "Mechanism of light emission in low energy ion implanted silicon", K.G. Gryczynski, A.K. Singh, A. Neogi, S.Y. Park, M. Kim *Journal of Luminescence*, **131**, 2621 (2011)
39. "Silver nanostructure sensing platform for maximum-contrast fluorescence cell imaging", K. Lee A. Neogi, P. Basu Neogi, P.; K. Minjung, K. Bongsoo, R. Luchowski, Z. Gryczynski, N. Calander, T. Y. Choi *Journal of Biomedical Optics*, **16**, 056008 (2011)

#### Invited Lectures and Seminars (2017-2011)

1. **Plasmonically induced transparency in graphene oxide quantum dots**, *Quantum Information Conference, Plenary talk, Chengdu, (July 21, 2017)*
2. **Ultrasonic devices using phononic meta-materials for secure communication and biomedical imaging**, *Shimane University, Invited talk Matsue, Japan, (February 8, 2017)*
3. **Hyperspectral Nano/Micro probe**, *University of Houston, Texas, USA October 25, 2016*
4. **Nanophotonics for Biomedical Applications**, *UAEM, Toluca, Mexico October 12, 2016)*
5. **Acoustic meta-materials for ultrasonic devices**, *National Fundamental and Frontier Student Summer Camp, Chengdu, China, (July 10-12, 2016)*
6. **Coherent Interaction in nanophotonics for quantum information**, *Frontier Forum on Quantum Information, Chengdu, China (June 17-19, 2016)*
7. **Light Matter interaction in semiconductor metal hybrid structures**, *SPIE Optics Conference, November 12-14, UAEM, Toluca, Mexico, 2015.*
8. **Metal optics beyond plasmonics for nanophotonic emitters**, *University of Engineering Science and Technology, Chengdu, China, June 25, 2015*
9. **ZnO nanoparticles for Theranostics**, *3rd China-Japan Bilateral Workshop on Nanomedicine, June 18-20, 2015*
10. **Broadband light emission and generation from semiconductor nanostructures**", *1st International Winter School, IFFS, UESTC, January 22-24, 2015, Chengdu, China*
11. **White light broadband light emission from semiconductors**, *Japan Women University, Invitational Lecture, (December 19, 2014)*
12. **Coulomb catalysis induced nonplasmonic light enhancement in nanophotonic emitters**, *EMN East Beijing, China (May 12-15, 2014)*
13. **Exploring Exploring photonics in the Mesoscale Limit: Assembly and Characterization of Hybrid light emitting Structures**, *University of Engineering Science and Technology, Chengdu, China, April 8, 2014*

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17. **Hybrid optical materials for Photonics**, *Michigan Molecular Institute, Midlands (May 13, 2013)*
18. **Enhancement of light emission via plasmonic and non-plasmonic effects in metal ion-implanted Silicon Nanoclusters**, *MRS Spring Meeting, San Francisco April 12, 2012*
19. **Nanoscale Strain mapping from active region of InGaN emitters**, *The 12th International Conference on Near-field optics, Nanophotonics and Related Techniques, San Sebastian, Spain Sept 3-7, 2012*
20. **ZnO nanoparticles for In vivo Bioimaging and drug delivery**, *International Symposium on Nanomedicine, Matsue, November 26-29, 2012*
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