

Curriculum Vitae



Saeed Mahmud Ullah, Ph.D.

Associate Professor

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Field of Interest:

Photovoltaic, Nanotechnology and Optoelectronics.

Current Research and Responsibilities:

I have been working on synthesis and fabrication of thin film solar cells as well as simulation of 3rd generation solar cells. I am also working on nano particles and other nano structures for the application of energy conversion, thermoelectricity and photonics.

As an Associate Professor of University of Dhaka, I am responsible of guiding MS and undergraduate students for their thesis and project works. In addition I give lectures on Material Science and Nanotechnology, Semiconductor Devices, Renewable Energy, Electronic and Electrical circuits and Communication Engineering.

Previous Research Experience:

Postdoctoral Research: 21st April 2011 to 20th April 2012 at Rhein-Waal University of Applied Sciences, Germany on the field of thermoelectricity. We established an experimental setup for Time Domain Thermo-Reflectance (TDTR) measurement to measure the thermal conductivity and diffusivity of isotopically enriched Si superlattice structure.

Ph.D. Research (Apr 2004 to Mar 2008):

I have done my Ph.D. from Tokyo Institute of Technology in Electrical and Electronic Engineering in 2008. My Ph.D. topic was “**Monolithic Integration of Photonic Devices with wirewidth modulated active regions**” under the supervision of Professor Shigehisa Arai in Arai-Nishiyama Lab of Quantum Nanoelectronics Research Center. Under this thesis, a GaInAsP/InP Distributed Reflector (DR) laser with record low threshold current (0.8 mA) was realized at 1.55 μm . Then high performance DR laser was monolithically integrated with Electro Absorption Modulator (EAM) and front side Power Monitor using wirewidth modulated active regions through electron beam lithography, dry etching and regrowth.

Experience with semiconductor device fabrication and measurement techniques:

Electron Beam lithography (fabricated as narrow as 18 nm wide quantum wire), Photolithography, Dry etching with RIE, Wet chemical etching, Scanning electron microscopy (SEM), Dielectric film deposition, Electron beam evaporation, Wafer lapping, Wire and die bonding, EL measurement of laser, PL measurement, Direct modulation measurement on laser (BER and eye pattern).

Research Experience in Renewable Energy:

I have worked on UNEP funded project on Solar and Wind Energy Resource Assessment (SWERA). Under this project solar and wind resource map of Bangladesh was developed along with other 12 countries. This project was carried out with the partnership of NREL, DLR, TERI, GEF. Later in 2008 I have worked with JICA to measure and validate wind speed data in Feni, Bangladesh.

Work Experience:

Position	University	Duration
Associate Professor	Electrical and Electronic Engineering, University of Dhaka, Dhaka, Bangladesh	December 2014 to till date
Associate Professor	Applied Physics, Electronics and Communication Engineering, University of Dhaka, Dhaka, Bangladesh	From 25 th Feb 2014 to November, 2014
Assistant Professor	Applied Physics, Electronics and Communication Engineering, University of Dhaka, Dhaka, Bangladesh	From 23 rd April 2009 to 24 th Feb 2014.
Postdoctoral Researcher	Rhine-Waal University of Applied Sciences, Landwehr 4, Kleve-47533, Germany	April 2011 to April 2012 (1 year)
Ph.D. Student	Arai-Nishiyama Lab, Quantum Nano Electronics Research Center, Tokyo Institute of Technology, Japan.	April 2005 to March 2008 (3 years)
Research Student	Arai-Nishiyama Lab, QNERC, Tokyo Institute of Technology, Japan.	April 2004 to March 2005 (1 year)
Lecturer	Applied Physics, Electronics and Communication Engineering, University of Dhaka, Dhaka, Bangladesh	From 30 th October 2003 to 22 nd April 2009
Research Fellow	Semiconductor Technology Research Center, University of Dhaka	May 2002 to April 2003 (1 year)
Research Fellow (Part time)	Solar and Wind Energy Resource Assessment (SWERA), RERC, University of Dhaka under UNEP project	May 2002 to Sep 2003 (1 year 5 months)

Educational Background:

Degree Obtained	Institution/Board	Result	Year
Ph.D.	Tokyo Institute of Technology	Awarded	2008
M.Sc.	Applied Physics and Electronics, University of Dhaka	1 st Class (1 st position)	1998
B.Sc. (Hon)	Applied Physics and Electronics, University of Dhaka	1 st Class (1 st position)	1997
HSC	Dhaka Board	1 st Division	1994
SSC	Dhaka Board	1 st Division	1992

Achievements/Awards:

- University Grant Commission (UGC) Research Grant-2015-16.
- **Monbukagakusho Scholarship** from April 2004 to March 2008.
- **Best student paper award** in IEEE international Conference of Indium Phosphide and Related Materials, 2007 (IPRM07) in Matsue, Japan. For the paper entitled “Sub-miliampere operation of 1540 nm Distributed Reflector Laser with Wirelike Active Regions”.
- Featured in the carrier section of IEEE LEOS newsletter of October 2008. <http://www.ieee.org/organizations/pubs/newsletters/leos/oct08/saeed.html>
- **Mirza Samsul Huda and Mahmuda Begum Gold Medal 1998, Dhaka University** for highest marks in M.Sc. in Applied Physics and Electronics.

Membership of Professional Associations:

- Associate Editor, South Asian Journal of Research in Engineering Science and Technology (SAJREST).
- Member, Editorial Board, South Asian Journal of Engineering and Technology (SAJET).
- Member, Editorial Board, International Journal of Research Innovations in Electrical Engineering (IJRIEE)

- Member, Editorial Board, International Journal of Embedded Systems and Applications (IJESA).
- Member, Editorial Board, International Journal of Research and Discovery (IJRD).
- Member, Editorial Board, International Journal of Research Innovations in Electrical Engineering (IJRIEE)
- Life Member, Bangladesh Solar Energy Society (BSES)
- Life Member, Bangladesh Physical Society
- Member, Bangladesh Electronics Society
- Member, Japanese Universities Alumni Association in Bangladesh
- Life Member, APECE-EEE Alumni Association, University of Dhaka.

Training:

- COMSOL Multiphysics 2-Day Intensive Training Course, Kolkata, India, 26-27 June, 2014.
- SWERA-RETScreen Regional Workshop (Bangladesh) Delivered by NRCan's CANMET Energy Technology Centre (CETC) 19-20 June, 2003, Dhaka University, Dhaka .
- Training course on Geographic Information Systems (GIS) April-July, 2003, The Institution of Engineers-Bangladesh, Dhaka.
- Asian Course on Advanced VLSI Design Techniques using a Hardware Description Language, organized by International Center for Theoretical Physics, Trieste, Italy, 25 November to 13 December, 2002 held in Manila, Philippines.
- 4-day course on Wind Atlas Analysis and Application Program (WasP), 30 September to 3 October, 2002, TERI, Bangalore, India.

Journal Publications:

1. Rafee Mahbub, Md. Saidul Islam, Farhana Anwar, Sakin Sarwar Satter and **Saeed Mahmud Ullah**, "Simulation of CZTS thin film solar cell for different buffer layers for high efficiency performance", South Asian Journal of Engineering and Technology Vol.2, No.52 (2016) 1–10.
2. Arin Dutta and **Saeed Mahmud Ullah**, "Simulation of the Electrical Characteristics and Carrier Concentration Profile of P3HT/PCBM Planar Hetero-junction Photovoltaic Cell", Iranica Journal of Energy and Environment 7(4):334-339, 2016.
3. Protap Kumar Mahanta, Kaiser Ahmed Rocky and **Saeed Mahmud Ullah**, "Performance Analysis of Metallic Single Walled Carbon Nanotube (SWCNT) in Circuit Interconnectios for VLSI", Dhaka Univ. J. Eng. & Tech., Vol 2(2), 99-106, 2014 (January).
4. Shihan Sajeed, N. Sultana, **S. M. Ullah**, Z. H. Mozumder, A. Ahmed, S. Rafique, "Implementation of Quantum NOT Gate using Electro-Optic Effect" Dhaka Univ. J. Eng. & Tech., Vol 2(2), 91-97, 2014 (January).
5. Md. Ahsan Habib, **Saeed Mahmud Ullah** and ShahidaRafique, "Transient characteristics of the InGaP–GaAs–InGaAs–GaAs transistor laser", Optical and Quantum Electronics, Vol.45, No.5, May 2013.
6. Md. Ahsan Habib, Subrata Das, **Saeed Mahmud Ullah**, and Shahida Rafique, "Optimal quantum well width and the effect of quantum well position on the performance of transistor lasers", Optoelectronics Letters, Vol.9, No.1, 1 January 2013.
7. Md. Mahfuzur Rahman, Mamun Hasan and **Saeed Mahmud Ullah**, "Design of a Low-Loss Y-Splitter for Optical Telecommunication using a 2D Photonics Crystal", International Journal of Computer Applications (0975 – 8887) Volume 60, No.14, December 2012.
8. Md. Ahsan Habib, Mohammad Zahir Uddin Suja, Sunayna Binte Bashar, Saeed Mahmud Ullah, "Band gap calculation of 2-D photonic crystal and its application towards thin film solar cell", Photonics Letters of Poland, Vol. 3, No 4 (2011).
9. Nigar Sultana, Shihan Sajeed and **Saeed Mahmud Ullah**, Analysis of extinction ratio of an EAM integrated with Distributed Reflector laser using wirewidth modulated active regions, Dhaka Univ. J. Eng. & Tech. Vol. 1(2) 1-3, 2011 (January).
10. **S. M. Ullah**, S.H. Lee, R. Suemitsu, N. Nishiyama and S. Arai, "GaInAsP/InP Distributed Reflector Lasers and Integration of Front Power Monitor by Using LateralQuantum Confinement Effect" Japanese Journal of Applied Physics, Volume 47, No. 6,pp.4558, 2008.

11. **S. M. Ullah**, R. Suemitsu, S.H. Lee, M. Otake, N. Nishiyama and S. Arai, "Low-Threshold-Current Operation of High-Mesa Stripe Distributed Reflector Laser Emitting at 1540nm" Japanese Journal of Applied Physics, Volume 46, No. 44, pp. L1068-L1070, 2007.
12. S.H. Lee, R. Suemitsu, **S. M. Ullah**, M. Otake, N. Nishiyama, S. Arai, "Very High Electric Isolation between Distributed Reflector Laser and Front Power Monitor through Deeply Etched Narrow Groove", Japanese Journal of Applied Physics, Volume 46, No. 39, pp. L954-L956, 2007.
13. D. Plumwongrot, Y. Nishimoto, **S. M. Ullah**, Y. Tamura, M. Kurokawa, T. Maruyama, N. Nishiyama and S. Arai, "Stabilization of Temperature Dependence Characteristics in GaInAsP/InP DFB Lasers with Wirelike Active Regions by Bragg Wavelength Detuning", Japanese Journal of Applied Physics. Vol.46, No.45 pp.L1090 - L1092, 2007.
14. K. Mathwig, W. Kaiser, A. Somers, J. P. Reithmaier, A. Forchel, K. Ohira, **S. M. Ullah** and S. Arai, "DFB Lasers With Deeply Etched Vertical Grating Based on InAs-InP Quantum-Dash Structures," IEEE Photon. Technol. Lett., vol. 19, no. 5, pp. 264-266, Mar.2007.
15. K. Ohira, T. Murayama, **S. M. Ullah**, H. Yagi and S. Arai, "GaInAsP/InP distributed reflector laser with phase shifted DFB and quantum-wire DBR sections", IEICE Electronic Express, vol. 2, no. 11, pp. 356-361, Jun 2005.
16. **Saeed Mahmud Ullah**, Md. Shahidul Islam, Zahid Hasan Mahmood, Jalalur Rahman, "Photoconductivity and photomagneto electric effect on intrinsic and n-type GaAs wafers", The Dhaka University Journal of Science, 50(2), pp. 267-269, July 2002.

International Conference Papers:

1. Vogelsang, **S. M. Ullah**, G. Bastian, A. Plech, N. Wehmeier, H. Bracht, P.C. Howell, Isotopically Enriched Semiconductor Superlattices for Thermoelectric Applications, Proceedings of First International Conference on Phononic Crystals, Metamaterials and Optomechanics, Santa Fe, USA, May 29- June 2, 2011.
2. Md. Ahsan Habib, Chowdhury Golam Sufi Al-Amin, Muhammad Sharifuzzaman Khan, Ibrahim Azad, **Saeed Mahmud Ullah** and Shahida Rafique, "Complete Bandgaps in two Dimensional Photonic Crystals with Square Bravais Lattice", International Conference on Photonics 2010 (ICP2010), Langkawi, Kedah, Malaysia, 5-7 July 2010.
3. Shihan Sajeed, Z. H. Mozumder, A. Ahmed, **S. M. Ullah**, S. Rafique, "An Approach to Realize a Quantum NOT Gate through Optical Implementation", IEEE International Conference on Electro/Information Technology, Illinois, USA, May, 20-22, 2010.
4. Shihan Sajeed, A. Ahmed, **S. M. Ullah**, Z. H. Mozumder "An Approach to Realize a Quantum HADAMARD Gate through Optical Implementation", IEEE International Conference on Electro/Information Technology, Illinois, USA, May, 20-22, 2010.
5. SH Lee, **S M Ullah**, T Shindo, K Davis, N Nishiyama and S Arai, "Bit-error-rate measurement of GaInAsP/InP Distributed Reflector laser with wirelike active regions", The 20th Indium Phosphide and Related Materials Conference (IPRM2008), France, May 2008.
6. **S. M. Ullah**, R. Suemitsu, S. H. Lee, M. Otake, N. Nishiyama and S. Arai, "Submilliampere operation of 1540 nm Distributed Reflector Laser with Wirelike Active Regions," The 19th Indium Phosphide and Related Materials Conference 17 0 (IPRM2007), Matsue (Japan), ThB2-1, May 2007.
7. **S. M. Ullah**, SH Lee, R. Suemitsu, K. Ohira and S. Arai, "Improved Performance of Distributed-Reflector Laser with Antireflection Coating," The 18th Indium Phosphide and Related Materials Conference (IPRM2006), Princeton (USA), WP-25, May 2006.
8. R. Suemitsu, **S. M. Ullah**, S. H. Lee, M. Otake, N. Nishiyama and S. Arai, "Integration of Front Power Monitor with Distributed Reflector Laser through Deep Etched Narrow Groove Isolation," The 19th Indium Phosphide and Related Materials Conference (IPRM2007), Matsue (Japan), TuB2-5, May 2007.
9. Y. Nishimoto, D. Plumwongrot, **S. M. Ullah**, Y. Tamura, M. Kurokawa, T. Maruyama, N. Nishiyama and S. Arai, "Improved Temperature Dependence of GaInAsP/InP DFB Lasers with Wirelike Active Regions by Bragg Wavelength Detuning," The 19th Indium Phosphide and Related Materials Conference (IPRM2007), Matsue (Japan), ThB2-3, May 2007.
10. H. R. Ghosh, **S. M. Ullah**, S. K. Khadem, N. C. Bhowmik and M Hussain, "Estimation of sunshine duration from cloud cover data for Bangladesh", International conference on Renewable Energy Technology for Rural Development, 12-14 October 2003, Kathmandu, Nepal.
11. **S. M. Ullah**, S. K. Khadem, H. R. Ghosh, R K Mozumder and M Hussain, "Prediction of Clock time hourly Global and diffuse radiation from daily values over Bangladesh", International conference on Renewable Energy Technology for Rural Development, 12-14 October 2003, Kathmandu, Nepal.
12. H R Ghosh, **S M Ullah**, S K Khadem, N C Bhowmik and M Hussain, "Measurement and Estimation of sunshine duration for Bangladesh", 3rd International Conference on Renewable Energy for Sustainable Development, 2-4 October 2003, Dhaka Bangladesh

13. Himangshu Ranjan Ghosh, **Saeed Mahmud Ullah**, Al-Mamun and Z H Mahmood, “Experimental studies on band gap energy of GaAs using conductivity and optical absorption methods”, The Twelfth International Workshop on The Physics of Semiconductor Devices 16 – 20 December 2003, IIT Madras, Chennai, India.
14. S. K. Khadem, J. Badger, **S. M. Ullah**, S. K. Aditya, H. R. Ghosh and M. Hussain, “The effect of obstacles close to the Anemometer mast located on a building on wind flow in the WAsP model”, International Conference on Renewable Energy Technology for Rural Development 12-14 October 2003, Kathmandu, Nepal.
15. S K Khadem, S K Aditya, **S M Ullah**, H R Ghosh and M Hussain, “WAsP analysis of wind energy over Kutubdia and selection of sites for wind generators”, 3rd International Conference on Renewable Energy for Sustainable Development 2-4 October 2003, Dhaka Bangladesh.
16. H R Ghosh, **S M Ullah**, S K Khadem, N C Bhowmik and M Hussain, “Prediction of sunshine duration from cloud cover for Bangladesh”, National Seminar on Renewable Energy in Bangladesh: Research and Application 14 September 2003, BSES and RERC, Dhaka University, Dhaka.



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