Department of Electrical and Electronic Engineering
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Dr. Md. Jahirul Islam
Professor
Research Area Optical Hollow Core Fiber (HCF) and Photonic Crystal Fiber (PCF) Optical sensor design Nonlinear fiber optics Nanotechnology High efficiency solar cell design Heterostructure Laser

Biography

*To know further about the ongoing research projects, group members, and collaboration, please visit Photonics Group KUET

Welcome to My Official Webpage

I'm **Dr. Md. Jahirul Islam**, currently working as a Professor at the Department of Electrical and Electronic Engineering (EEE) in Khulna University of Engineering & Technology (KUET), Khulna-9203, Bangladesh. I've received my B.Sc. and M.Sc. Engineering degrees in Electrical and Electronic Engineering from KUET with honors in all terms. I've received my PhD from The University of Sydney, Australia. My research interest includes nonlinear optics, solitons, semiconductor laser, semiconductor solar cells, and nano technologies.

If you have any inquiry feel free to Contact me.

Education

Doctor of Philosophy
The University of Sydney,Australia(2013-2016)
Thesis Title: Stability and Dynamics of Bragg Grating Solitons in a Semilinear Dual-Core System with Cubic-Quintic Nonlinearity
M.Sc. in Electrical and Electronic Engineering
Khulna University of Engineering & Technology (KUET),Bangladesh(2009-2012)
Thesis Title: Modeling and Performance Analysis of 1.55 Î¼m Quantum Well Edge Emitting Laser Based on InGaN
B.Sc. in Electrical and Electronic Engineering
Khulna University of Engineering & Technology (KUET),Bangladesh(2005-2009)Achievement:Gold Medalist

Service Records

- **Professor**
  Department/Section: EEE
  Khulna University of Engineering & Technology *From 01-01-1970 to 01-01-1970*
  Responsibility:Teaching Undergraduate and Postgraduate students, and also supervising undergraduate and postgraduate thesis and projects
- **Associate Professor**
  Department/Section: EEE
  Khulna University of Engineering & Technology *From 01-01-1970 to 01-01-1970*
  Responsibility:Teaching Undergraduate and Postgraduate students, and also supervising undergraduate and postgraduate thesis and projects
- **Assistant Professor**
  Department/Section: Electrical and Electronic Engineering,
  Khulna University of Engineering & Technology *From 01-01-1970 to 01-01-1970*
  Responsibility:Teaching Undergraduate and Postgraduate students, and also supervising undergraduate and postgraduate thesis and projects
- **Teaching Assistant**
  Department/Section: Electrical and Information Engineering
  The University of Sydney *From 01-01-1970 to 01-01-1970*
  Working Area:Electrical Circuits, Optoelectronics, and Electromagnetics
  Responsibility:Teaching, Tutoring and Evaluation
- **Lecturer**
  Department/Section: Electrical and Electronic Engineering,
  Khulna University of Engineering & Technology *From 01-01-1970 to 01-01-1970*
  Working Area:Teaching and supervision
  Responsibility:Teaching 1st, 2nd, 3rd and 4th year students and also supervising undergraduate thesis and projects.
- **Lecturer (Part Time)**
  Department/Section: Electrical and Electronic Engineering,
  Khulna University of Engineering & Technology *From 01-01-1970 to 01-01-1970*
  Working Area:Teaching

Research Interest

Optical Hollow Core Fiber (HCF) and Photonic Crystal Fiber (PCF)

Design devices with HCF and PCF.

Optical sensor design

Use of Multiphysics COMSOL

Nonlinear fiber optics

Related to solve Maxwell and non-linear Schrodinger equations.

Optical solitons in single or coupled media.

Nanotechnology

High efficiency solar cell design

Numerical investigation on the efficiency enhancement of solar cells

Heterostructure Laser

Modelling and performance analysis of semiconductor based lasers.

Publication

Books

1. (2023) , ***Book Chapter in Studies in Autonomic, Data-driven and Industrial Computing*** , ISBN:978-981-19-7528-8,Springer

Journals

20. Nahid,E. , Islam,M. J. , Kaysir,M. R. , Hossain,S. S. and Rahman,M. S. (2023) , " Au-strip structure dependent performance investigation of D-shaped SPR sensors for biosensing applications," ***Results in Optics***, Elsevier, vol12, pp.100460

19. Palash,T. I. , Kaysir,M. R. , Islam,M. J. , Aziz,S. B. and Akther,T. N. M. a. N. (2023) , " In-Silico Performance Investigation of Nanoparticle-Assisted Photo Thermal Ablation," ***Journal of Biological Systems***, World Scientific

18. (2022) , " A Critical Review on the Sensing, Control, and Manipulation of Single Molecules on Optofluidic Devices," ***Micromachines***, MDPI, vol13, no.6, pp.968

16. (2021) , " Stability of moving Bragg solitons in a semilinear coupled system with cubicâ€“quintic nonlinearity," ***Journal of Modern Optics*** , Taylor & Francis, pp.1-9

16. Rahman,M. A. , Islam,M. J. , Islam,M. R. and Mahmud,a. M. A. P. (2021) , " Strain Dependent Performance Analysis of InGaN Multi-junction Solar Cell," ***Transactions on Electrical and Electronic Materials***, Springer

15. Chowdhury,Y. Z. , Islam,M. J. , Kaysir,M. R. and Akhi,a. J. A. (2021) , " Selection of metals for the optimal performance of metamaterial based hollow core fibers for terahertz applications," ***Sensing and Bio-Sensing Research***, Elsevier, vol32, pp.100411

14. Ajad,A. K. , Islam,M. J. , Kaysir,M. R. and Atai,a. J. (2020) , " Highly sensitive bio sensor based on WGM ring resonator for hemoglobin detection in blood samples," ***Optik***, Elsevier, vol226, pp.166009

13. Akand,T. and Kaysir,M. J. I. a. M. R. (2020) , " Low loss hollow-core optical fibers conjoining tube lattice and revolver structures," ***Results in Optics***, vol1, pp.1-7

12. Rafi,H. N. and Islam,M. R. K. a. M. J. (2020) , " Air-hole attributed performance of photonic crystal fiber-based SPR sensors," ***Sensing and Bio-Sensing Research***, Elsevier, vol10036, pp.1-7

11. (2018) , " Solitonâ€“soliton interactions in a grating-assisted coupler with cubic-quintic nonlinearity," ***Journal of Modern Optics***, Taylor & Francis, UK, vol65, no.18, pp.2153-2159

6. Islam,<. J. I. , Habibullah,M. , Haque,S. H. H. and Hossain,a. M. M. , " High Efficiency AlAs/GaAs/Ge Lattice Matched Multijunction Solar Cells,"

5. Islam,M. J. and Islam,M. R. (2011) , " Design and Gain Analysis of 1.55 Âµm Laser Using InGaN,", vol3, no.1

4. Kaysir,M. R. , Islam,M. R. , Islam,M. J. , Rahman,M. and Alamgir,M. K. (2011) , " Design and Implementation of a Novel Multichannel Temperature Data Logger with Thermal Protection,", vol2, no.2

3. Habibullah,M. , Islam,M. J. , Rafiq,M. A. , Halder,K. K. and Ghosh,a. B. C. (2011) , " A New DTC-SVM Based Control of Field Oriented Position Sensorless Induction Motor Drive with Reduced Torque and Flux Ripple,", vol3, no.3

2. Islam,M. J. , Habibullah,M. , Haque,S. H. H. and Hossain,a. M. M. (2011) , " High Efficiency AlAs/GaAs/Ge Lattice Matched Multijunction Solar Cells,", vol11, no.5

1. (2010) , " Design and performance of 1.55 Î¼m laser using InGaN,", vol7, no.7â€“8

Conference

27. Alam,S. S. ,Islam,M. J. and Hossain,M. R. K. a. S. S. (January 12-14, 2023) , "Q-factor and Band Gap Analysis of One-Dimensional Photonic Crystal Nanobeam Cavity for Sensing Applications," ***International Conference on Engineering Research, Innovation and Education (ICERIE)***

26. Hossain,S. S. , Islam,M. J. , Nahid,E. , Kaysir,M. R. and Rahman,M. S. (January 12-14, 2023) , "Improving the Sensitivity of D-shaped SPR Sensors by Multi-arc Au-strip," ***International Conference on Engineering Research, Innovation and Education (ICERIE)***

25. Arin,I. ,Nahiduzzaman,M. and Kaysir,M. J. I. a. M. R. (24-26 February, 2022) , "Effect of the PMMA Layer Thickness on the Performance of Lab-on-fiber Radiation Dosimeter," ***2nd International Conference on Advancement in Electrical and Electronic Engineering*** , IEEE Xplore, pp.1-5

24. Tasnim,Z. and Kaysir,M. J. I. a. M. R. (17-19 December 2021) , "Effect of Interlayers on the Performance of Organic Photovoltaic Cells," ***5th International Conference on Electrical Information and Communication Technology (EICT)*** , IEEE Xplore, pp.1-5

23. Tasnim,S. and Islam,M. R. K. M. J. (September 14-16, 2021) , "Effect of Plasmonic Silver Nanoparticles Layer on The Performance of Organic Photovoltaic Cell," ***2021 International Conference on Electronics, Communications and Information Technology (ICECIT)*** , IEEE Xplore, pp.1-4

22. Hossain,B. and Islam,M. R. K. a. M. J. (February 26-28, 2021) , "Sensitivity analysis of capillary optical fiber-based pressure sensors," ***6th International Conference on Engineering Research, Innovation and Education (ICERIE 2021)***

21. Akhi,J. A. and Islam,M. R. K. a. M. J. (February 26-28, 2021) , "Outline to Lowering Transmission Loss of Metamaterial based Hollow Core Fiber for Guiding IR Light," ***6th International Conference on Engineering Research, Innovation and Education (ICERIE 2021)***

20. Akand,T. and Kaysir,M. J. I. a. M. R. (17-19 Dec, 2020) , "Effect of capillary parameters on the performance of modified negative curvature hollow core fibers," ***International Conference on Electrical and Computer Engineering (ICECE)*** , IEEE Xplore, pp.157-160

19. Ajad,A. K. and kaysir,M. J. I. a. M. R. (17-19 Dec, 2020) , "Numerical analysis of Mach-Zehnder interferometer based optical sensors incorporating WGM ring resonator," ***International Conference on Electrical and Computer Engineering (ICECE)*** , IEEE Xplore, pp.201-204

18. Tonmoy,S. P. and kaysir,M. J. I. a. M. r. (28-29 Nov, 2020) , "Investigation of the Carrier Dynamics and Electrical Pumping Behavior of InAs/GaAs Quantum Dot Lasers," ***International Conference on Advanced Information and Communication Technology*** , IEEE Xplore, pp.399-404

17. Yasmin,N. and Islam,M. J. I. a. M. R. (28-29 Nov, 2020) , "Performance of Fiber Optic MW-OCDMA System in Presence of XPM Effect," ***International Conference on Advanced Information and Communication Technology*** , IEEE Xplore, pp.365-370

14. Sarker,M. N. ,Kaysir,M. R. and Islam,<. J. I. (28-30 Dec. 2019) , "Modal analysis of capillary optical fibers and their possible applications in sensing," ***2019 IEEE International Conference on Telecommunications and Photonics (ICTP)*** , IEEE, pp.1-4

13. (26-28 Sept. 2019) , "Study on the Strain Dependent Performance of CdTe:Te-based Multijunction Solar Cells," ***2019 5th International Conference on Advances in Electrical Engineering (ICAEE)*** , IEEE, pp.850-854

6. Hossain,M. L. , Islam,M. I. , Mitul,A. F. , Mollah,M. A. S. and Islam,a. M. J. (2013) , "Efficiency enhancement of InGaN based quantum well and quantum dot solar cell,", IEEE Xplore, pp.1-5

5. Islam,<. J. I. ,Islam,M. R. and Hossain,M. M. (December 19-20, 2011) , "Design and Characterization of InGaN Based 1.55 Âµm Lasers Using Thermal Modeling,"

4. Islam,<. J. I. and Islam,M. R. (March 28-31, 2011) , "Design and Gain Analysis of 1.55 Âµm Laser Using InGaN,"

3. Islam,<. J. I. ,Habibullah,M. and Kaysir,S. H. H. H. &. M. R. (11-13 January 2011) , "Design of AlAs/GaAs/Ge Lattice Matched Multijunction Solar Cells,"

2. Habibullah,M. ,Islam,<. J. I. and Rafiq,M. A. (11-13 January 2011) , "Steady State Analysis of a CCI-Fed Induction Motor Drive With Field Orientation Control,"

1. (2010) , "Design and performance of 1.55 Âµm laser using InGaN,"