

Lecturer
 Department of Electrical & Electronic Engineering,
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EDUCATION:

M.Sc. in Electrical & Electronic Engg., Bangladesh Univ. of Engineering & Technology,
 Expected graduation Sep. 2011. GPA: 4.00/4.00.
 B.Sc. in Electrical & Electronic Engg., Bangladesh Univ. of Engineering & Technology, Oct. 2009.
 GPA: 4.00/4.00, Rank: 1/138 (in EEE Dept.).
 Higher Secondary Certificate Examination, Notre Dame College, Bangladesh, Oct. 2004.
 GPA Obtained: 5.00/5.00.

RESEARCH INTERESTS:

Nanophotonics & -electronics, optoelectronics
 Physics & applications of novel nanoscale devices
 Modeling and characterization of solid state devices

INTERNATIONAL AWARDS:

1. IEEE Electron Device Society Best Paper Award,
 IEEE Student Conference on Research and Development, Malaysia, '09.
2. Member, Outstanding Undergraduate Educational Impact Award Winning Team,
 International Future Energy Challenge, USA, '07.
3. Member, IEEE Enterprise Award Winning Team, IEEE BUET Student Branch, '06-'07.

ACADEMIC HONORS:

- ◇ Chancellor's award (highest CGPA in the university, to be conferred in Convocation '10).
- ◇ Gold medal (highest CGPA in the Dept. of EEE, to be conferred in Convocation '10).
- ◇ Mitsubishi Corporation International Scholarship,
 awarded for achieving the highest CGPA in the faculty during the first three academic sessions '09.
- ◇ Dean's list award in all levels and Merit scholarship in all semesters.
- ◇ Khatimunnisa and Hanif Lashkar Trust Fund Scholarship,
 awarded twice for academic excellence in university in '06 and '09.

PUBLICATIONS:

6. **R. Islam**, E. M. Amin, M. Z. Baten, and Q. D. M. Khosru, *Potential Future Generation Nanoscale MOS Device: Trigate (TG) or Double Gate (DG) FinFETs?*, 3rd **IEEE International NanoElectronics Conference (INEC)**, Hong Kong, Jan. '10.
 5. M. Z. Baten, **R. Islam**, E. M. Amin, and Q. D. M. Khosru, *Self Consistent Simulation for C-V Characterization of sub 10nm Tri-Gate and Double Gate SOI FinFETs Incorporating Quantum Mechanical Effects*, **IEEE Students Conference on Research and Development (SCOReD)**, Malaysia, Nov. '09.
 4. E. M. Amin, M. Z. Baten, **R. Islam**, and Q. D. M. Khosru, *Quantum Mechanical Effect on Determining Threshold Voltage of Trigate FinFET Using Self-Consistent Analysis*, **IEEE TENCON**, Singapore, Nov. '09.
 3. **R. Islam**, S. R. M. Anwar, A. T. Kamal, S. N. Rahman, H. M. Faraby, H. Imtiaz, M. S. Jahan, F. S. Tulip, *Battery Chemistry Detection Algorithm Implementable with Intelligent Systems: A Step towards the Development of a Novel Charger Applicable for Multi-Chemistry Environment*, 2nd **International Symposium on Intelligent Information Technology Application (IITA)**, China, Dec. '08.
 2. M. Z. Baten, E. M. Amin, A. Sharin, **R. Islam**, and S. A. Chowdhury, *Renewable Energy Scenario of Bangladesh: Physical Perspective*, 1st **International Conference on the Developments in Renewable Energy Technology (ICDRET)**, Bangladesh, Dec. '09.
 1. S. M. Muhtadi, S. M. S. Hossain, **R. Islam**, Z. H. Mahmood, and A. G. Bhuiyan, *Charge Control Characteristic of a Novel In_mGa_{1-m}N/InN High Electron Mobility Transistor Incorporating Quantum Mechanical Effects*, **Silver Jubilee Conference on Communication Technologies and VLSI Design**, India, Oct. '09.
- ◇ **R. Islam**, A. Haque, *A Physically Based Compact Model for Eigenenergy in In rich In_{1-x}Ga_xAs MOSFETs Using Modified Airy Function Approximation*, 6th **International Conference on Electrical & Computer Engineering (ICECE)**, Dhaka, Dec. '10. (*accepted*)
 - ◇ **R. Islam**, M. Z. Baten, E. M. Amin, Q. D. M. Khosru, *On the Distinction Between Triple Gate (TG) and Double Gate (DG) SOI FinFETs: A Proposal of Critical Top Oxide Thickness*, 6th **International Conference on Electrical & Computer Engineering (ICECE)**, Dhaka, Dec. '10. (*accepted*)

CONFERENCE PRESENTATION:

3rd *IEEE International NanoElectronics Conference*, City University of Hong Kong, Hong Kong, Jan. 3-8, '10.

RESEARCH EXPERIENCES:

Quantum Mechanical Modeling of III-V MOSFETs

- ◇ Developed a physically based compact model for eigenenergy in In rich $\text{In}_{1-x}\text{Ga}_x\text{As}$ MOSFETs.
- ◇ Currently developing a physically based compact model for semiconductor capacitance as a function of surface potential in In rich $\text{In}_{1-x}\text{Ga}_x\text{As}$ MOSFETs.
- ◇ Also developed a 1-D self-consistent Schrödinger-Poisson solver for III-V MOSFETs taking the strain effects between different heterointerfaces into account.

Modeling and Characterization of FinFETs

- ◇ Developed a 2-D self-consistent Schrödinger-Poisson solver for Triple Gate and Double Gate FinFETs.
- ◇ Using ballistic current model, performed a comparative study on transport properties of FinFETs with Fin thickness variation.

Other Research Experience

- ◇ Developed a 1-D self-consistent Schrödinger-Poisson solver for High Electron Mobility Transistors (HEMT) to calculate the sheet carrier density in the channel.

PROFESSIONAL EXPERIENCES:

Lecturer, Department of Electrical and Electronic Engg., BUET (November '09 - Present)

- ◇ Courses instructed (Theory): Electrical Properties of Materials (EEE 307), Basic Electrical Technology (EEE 165).
- ◇ (Laboratory): Microprocessor & Interfacing (EEE 316), Electrical Circuit Simulation (EEE 110), Digital Electronics (EEE 304), Digital Signal Processing (EEE 312), Numerical Technique Laboratory (EEE 212).

LEADERSHIP EXPERIENCES:

Secretary & Treasurer ('10-present), IEEE Electron Device Society, Bangladesh Chapter (EDS).

- ◇ Organized regular activities like membership drives, career development activities, research seminars.

Treasurer ('06-'07), IEEE BUET Student Branch (SB).

- ◇ During this period IEEE BUET Student Branch took part in IEEE Enterprise Award competition for the first time and became one of the winners.

Moderator (2005-Present), EEE Undergraduate Student Research Group, BUET.

Class Representative ('05-'09), EEE Department, Section A, Class of 2009.

PROFESSIONAL AFFILIATIONS:

- ◇ The Institute of Electrical and Electronics Engineers, Inc. (IEEE) ◇ IEEE Electron Devices Society
- ◇ nanoHUB.org (registered user)

RELEVANT COURSEWORK:

Undergraduate courses

- ◇ Solid State Devices ◇ Optoelectronics ◇ Compound Semiconductor and Heterojunction Devices ◇ Analog Integrated Circuit ◇ Microwave Engineering ◇ Electrical Properties of Materials ◇ Engineering Electromagnetics ◇ Processing and Fabrication Technology ◇ Physics (Heat & thermodynamics, modern physics) ◇ Continuous Signals and Linear Systems ◇ Linear Algebra

Postgraduate courses taken

- ◇ MOS Devices ◇ Semiconductor Characterization Technology ◇ Carbon Nanotechnology

SYNERGISTIC ACTIVITIES:

- ◇ Participation in HSBC Young Entrepreneurs Award Competition 2006-07. Prepared a detailed bussiness plan for the competition.
- ◇ Participation in sports (Football, Cricket, Table Tennis). Became champion in the annual sports competition in school (2001).
- ◇ Photography, two photos have been exhibited in the 3rd Friendship Art Exhibition, Oct. 2009, held in National Art Gallery, Dhaka.
- ◇ Music, playing violin.
- ◇ Champion (2005), 1st SPARKS (Brain Storming) Quiz Competition, organized by IEEE BUET Student Branch.