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- Profile Login

Search for: * Home * Admission * UG Program Research * Degree Requirement * EEE (Course Sequence) * Curriculum * Waiver/Scholarship * Admission * Student Activities * Research Research * Cadence at UIU * CER * Dept Publications * ESRG * Research Areas * Sponsored Projects * Undergraduate Projects * Faculty Members * News & Event Research * News * Events * Notices * Facilities Research * Lab Facilities * VTA * PETA * Resources * ICDRET24 * About Research * Welcome Message * Mission & Vision * Why EEE at UIU * Strength of EEE, UIU * Contact

Dr. Sadid Muneer

Associate Professor, Dept. of EEE & Undergraduate Coordinator

ROOM: 512 (D) PABX: 3312 Email: sadidmuneer@eee.uiu.ac.bd sadidmuneer@eee.uiu.ac.bd +8801714078421 * Home * Faculty Profiles

- Biography
- Education
- Research Interest
- Publication
- Experience
- Teaching
- Professional Contribution
- Contacts
- Resources
- Publication

Biography

Associate Professor & Undergraduate Program Coordinator

Education

	Ph.D. in Electrical Engineering (Nanoelectronics)University of Connecticut (UConn)Storrs, CT, USA, March 2019
	B. Sc. in Electrical & Electronic EngineeringBangladesh University of Engineering & Technology (BUET)Dhaka, Bangladesh, June 2007
### Research Interest	
### Thermoelectric Effects in Nanoscale Transport	
Asymmetric melting of Si micro-wire under electrical stress. Generation-transport-recombination (GTR) of minority carriers is one of the contributors of this thermoelectric effect (Moreâ€¦).	
### Phase Change Memory: Novel Device Structures and Electrothermal Finite Element Simulation	

Design of vacuum-insulated self-aligned nanowire phase-change memory devices to minimize the current requirement and suppress crosstalk (Moreâ€¦).	
### Material Parameter Extraction from Nanoscale Device Measurements	
Effective activation energy from room temperature to melt calculated from the measured resistivity of metastable amorphous GST (Moreâ€¦).	
### Publication	
Full publication list here.	
### Journal:	
9. **S. Muneer** , M. A. H. Chowdhury, M. Kabiruzzaman, S. Shahnewaz, N. Noor, and M. Hossain, â€œThermal Confinement by Monolayer MoS2 for Reduced RESET Current in Phase Change Memory Pillar Cells.â€ in ACS Applied Electronic Materials, vol. , pp. , Jun 2024, doi: 10.1021/acsaelm.4c00721.	
8. **S. Muneer** , G. Bakan, A. Gokirmak, and H. Silva, â€œIncorporation of Generation-Transport-Recombination (GTR) in Semiconductor Simulations.â€ in *Journal of Applied Physics* , vol. 129, pp. 055702-1:13, Feb 2021, doi: 10.1063/5.0037411.	
7. N. Noor, **S. Muneer** , R. S. Khan, A. Gorbenko, L. Adnane, M. T. B. Kashem, J. Scoggin, F. Dirisaglik, A. Cywar, A. Gokirmak, and H. Silva, â€œReset Variability in Phase Change Memory for Hardware Security Applications.â€ in *IEEE Transactions on Nanotechnology* , vol. 20, pp. 75-82, Nov 2020, doi: 10.1109/TNANO.2020.3041400.	
6. N. Noor, **S. Muneer** , R. S. Khan, A. Gorbenko, and H. Silva, â€œEnhancing Programming Variability in Multi-bit Phase Change Memory Cells for Security,â€ in *IEEE Transactions on Nanotechnology* , vol. 19, 820-828, Nov 2020, doi: 10.1109/TNANO.2020.3037097.	
5. N. Noor, **S. Muneer** , R. S. Khan, A. Gorbenko, and H. Silva, â€œAmorphized length and variability in phase-change memory line cells,â€ *Beilstein Journal of Nanotechnology* 11, no. 1, 1644-1654, Oct 2020, doi: 10.3762/bjnano.11.147.	
4. **S. Muneer** , J. Scoggin, F. Dirisaglik, L. Adnane, A. Cywar, G. Bakan, K. Cil, C. Lam, H. Silva, and A. Gokirmak, â€œActivation Energy of Metastable Amorphous Ge2Sb2Te5 from Room Temperature to Melt.â€ *AIP Advances* , 8, issue 6, 065314-1:8, Jun 13, 2018, doi: 10.1063/1.5035085.	
3. A. Deschenes, **S. Muneer** , M. Akbulut, A. Gokirmak, and H. Silva, â€œAnalysis of Self-heating of Thermally Assisted Spin-transfer Torque Magnetic Random Access Memory.â€ *Beilstein Journal of Nanotechnology* , 7, 1676â€“1683, Nov 11, 2016, doi: 10.3762/bjnano.7.160.	
2. F. Dirisaglik, G. Bakan, Z. Jurado, **S. Muneer** , M. Akbulut, J. Rarey, L. Sullivan, M. Wennberg, A. King, L. Zhang, R. Nowak, C. Lam, H. Silva, and A. Gokirmak, â€œHigh Speed, High Temperature Electrical Characterization of Phase Change Materials: Metastable Phases, Crystallization Dynamics, and Resistance drift.â€ *Nanoscale* , 7, issue 40, 16625-16630, Sep 22, 2015, doi: 10.1039/C5NR05512A.	
1. **S. Muneer**, A. Gokirmak, and H. Silva, â€œVacuum-Insulated Self-aligned Nanowire Phase-change Memory Devices.â€ *IEEE Transactions on Electron Devices (TED)* , 62, issue 5, 1668-1671, Apr 20, 2015, doi: 10.1109/TED.2015.2414716.	
### Book Chapter:	
1. R. S. Khan, N. Noor, C. Jin, J. Scoggin, Z. Woods, **S. Muneer** , A. Ciardullo, P. H. Nguyen, A. Gokirmak, M. van Dijk, and H. Silva, â€œPhase Change Memory and Its Applications in Hardware Security.â€ in: Security Opportunities by Nano Devices and Emerging Technologies, *CRC Press* , 2017, doi: 10.1201/9781315265056.	
### E-print:	

1. R. S. Khan, N. Kanan, C. Jin, J. Scoggin, N. Noor, **S. Muneer**, F. Dirisaglik, P. H. Nguyen, H. Silva, M. van Dijk, and A. Gokirmak, â€œIntrinsically Reliable and Lightweight Physical Obfuscated Keys.â€ arXiv preprint arXiv:1703.07427, 2017 (link).	
### Conference Proceedings:	
6. M. T. B. Kashem, **S. Muneer** , L. Adnane, F Dirisaglik, A. Gokirmak and H. Silva, â€œCalculation of the Energy Band Diagram and Estimation of Electronic Transport Parameters of Metastable Amorphous Ge2Sb2Te5.â€ Talk & proceeding, 241st ECS Meeting, Vancouver, Canada, May 29, 2022 â€“ June 2, 2022, doi: 10.1149/10801.0029ecst.	
5. A. Gorbenko, N. Noor, **S. Muneer** , R. S. Khan, F. Dirisaglik, A. Cywar, B. Shakya, D. Forte, M. v. Dijk, A. Gokirmak, H. Silva, â€œResistance Drift and Crystallization in Suspended and On-oxide Phase Change Memory Line Cells.â€ Talk, *19th IEEE Conference on Nanotechnology (IEEE-NANO)* , ThOBO5.1, Parisian Macao, Macau, China, Jul 22-26, 2019, doi: 10.1109/NANO46743.2019.8993884.	
4. N. Noor, R. S. Khan, **S. Muneer** , H. Silva, â€œTamper Evidence of SEM Imaging Attack in Phase Change Memory Nanodevices.â€ Talk & proceeding, *19th IEEE Conference on Nanotechnology (IEEE-NANO)* , ThOBO4.3, Parisian Macao, Macau, China, Jul 22-26, 2019, doi: 10.1109/NANO46743.2019.8993903.	
3. R. S. Khan, N. Noor, C. Jin, **S. Muneer** , F. Dirisaglik, A. Cywar, P. H. Nguyen, M. v. Dijk, A. Gokirmak, H. Silva, â€œExploiting Lithography Limits for Hardware Security Applications.â€ Talk & proceeding, *19th IEEE Conference on Nanotechnology (IEEE-NANO)* , WeOAO1.3, Parisian Macao, Macau, China, Jul 22-26, 2019 (nominated for best paper award), doi: 10.1109/NANO46743.2019.8993902.	
2. F. Dirisaglik, G. Bakan, **S. Muneer** , N. Williams, M. Akbulut, H. Silva, and A. Gokirmak, â€œElectrical Pump-Probe Characterization Technique for Phase Change Materials.â€ Talk & proceeding, *74th Device Research Conference (DRC)* , Newark, Delaware, USA, Jun 19-22, 2016, doi: 10.1109/DRC.2016.7548508.	
1. N. Noor and **S. Muneer** , â€œConcentrating Solar Power (CSP) and Its Prospect in Bangladeshâ€, *1st International Conference on the Developments in Renewable Energy Technology (ICDRET)* , Dhaka, Bangladesh, December 2009, doi: 10.1109/ICDRET.2009.5454207.	
### Conference Talks and Posters:	
36 talks and posters in prestigious conferences, such as:	
* â€“ Materials Society Meeting (MRS), USA.	
* â€“ Applied Physics Society (APS) Meeting, USA.	
* â€“ European Phase Change and Ovonic Symposium (E/PCOS), Grenoble, France.	

Full list of talks and posters is here.

Experience

Dec 18, 2022 to date	**Associate Professor, Department of Electrical & Electronic Engineering, United International University (UIU)**
Sep 14, 2019 to date	Undergraduate Program Coordinator, Department of Electrical and Electronic Engineering, United International University (UIU)
Dec 22, 2019 to Dec 17, 2022	Assistant Professor, Department of Electrical & Electronic Engineering, United International

	University (UIU)
Apr, 2012 to Mar, 2019 and Aug, 2011 to Dec, 2011	Graduate Assistant, Department of Electrical & Computer Engineering, University of Connecticut, USA
* Research Assistant, Fall 2011, Summer & Fall 2012, Spring, Summer & Fall 2013-2018, Spring 2019 â€“ Nanoelectronics Lab	
* Teaching Assistant, Spring 2013, 2017, 2018 & Summer 2013: ECE 2001W â€“ Electrical Circuits, Fall 2015, 2016, 2017: ECE 4225 â€“ Electron Device Design and Characterization	
* Grader, Fall 2013: ECE 2001W â€“ Electrical Circuits, Fall 2011 & Fall 2012: ECE 3001 â€“ Electromagnetic Fields & Waves	

Oct 08, 2008 to Dec 21, 2019 | Lecturer, Department of Electrical & Electronic Engineering, United International University (UIU)
May 27, 2007 to Oct 7, 2008 | SI Solution Integrator, Ericsson Bangladesh Limited

Teaching

Summer 2024 * EEE 2101: Electronics II * EEE 2104: Electronics Laboratory

Spring 2024 * EEE 2101: Electronics II * EEE 2104: Electronics Laboratory

Fall 2023 * EEE 2101: Electronics I * EEE 2103: Electronics II * EEE 3208: Power Electronics Laboratory

Summer 2023 * EEE 2101: Electronics I * EEE 2103: Electronics II * EEE 2104: Electronics Laboratory

Spring 2023 * EEE 2101: Electronics I

Fall 2022 * EEE 2101: Electronics I * EEE 2104: Electronics Laboratory * EEE 3308: Communication Laboratory

Summer 2022 * EEE 2101: Electronics I * EEE 2104: Electronics Laboratory * EEE 2000: Simulation Laboratory

Spring 2022 * EEE 2301: Signals and Linear Systems

Fall 2021 * EEE 2301: Signals and Linear Systems * EEE 3107: Electrical Properties of Materials

Summer 2021 * EEE 3107: Electrical Properties of Materials * EEE 2000: Simulation Laboratory * EEE 4903: Capstone Project III

Spring 2021 * EEE 2301: Signals and Linear Systems * EEE 3107: Electrical Properties of Materials * EEE 4903: Capstone Project III

Fall 2020 * EEE 2301: Signals and Linear Systems * EEE 3107: Electrical Properties of Materials

Summer 2020 * EEE 2301: Signals and Linear Systems * EEE 3107: Electrical Properties of Materials

Spring 2020 * EEE 211: Signals and Linear Systems (Sec A) * EEE 211: Signals and Linear Systems (Sec B)

Fall 2019 * EEE 211: Signals and Linear Systems * EEE 301: Electrical Properties of Materials

Professional Contribution

Director: * International Relations and Industry Liasson, Board of Accreditation for Engineering and Technical Education (BAETE)

Membership: * IEEE (Institute of Electrical and Electronics Engineers), since 2007 * IEB (The Institution of Engineers, Bangladesh)

Journal Reviewer: * Thin Solid Films

Conference Reviewer: * NMDC 2024 (Salt Lake City, Utah, USA) * ICDRET 2024 (UIU, Dhaka, Bangladesh) * ICTP 2023 (BUET, Dhaka, Bangladesh) * IC4IR 2021 (Dhaka, Bangladesh) * ICREST 2021 (AIUB, Dhaka, Bangladesh) * ICAICT 2020 (UIU, Dhaka, Bangladesh) * IEEE NANO 2019 (Macau, China)

Contacts

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Resources

- An effective tutorial on Python: https://youtu.be/jFCNu1-Xdsw
- ABACUS (Assembly of Basic Applications for Coordinated Understanding of Semiconductors): https://nanohub.org/wiki/EduSemiconductor2

Publication

Journal Papers

2024## Thermal Confinement by Monolayer MoS2 for Reduced RESET Current in Phase Change Memory Pillar Cells Publication: ACS Applied Electronic Materials Author List: Sadid Muneer, Md. Kabiruzzaman, Nafisa Noor, Muhammad Aminul Haque Chowdhury, Mainul Hossain, Shafat Shahnewaz 2022## (Digital Presentation) Calculation of the Energy Band Diagram and Estimation of Electronic Transport Parameters of Metastable Amorphous Ge2Sb2Te5 Publication: ECS Transactions Author List: Md Tashfiq Bin Kashem, Ali Gokirmak, Helena Silva, Faruk Dirisaglik, Sadid Muneer, Lhacene Adnane 2021## Incorporation of GTR (generationâ€“transportâ€“recombination) in semiconductor simulations Publication: Journal of Applied Physics Author List: Sadid Muneer, Gokhan Bakan, Ali Gokirmak, Helena Silva 2020## Amorphized length and variability in phase-change memory line cells Publication: Beilstein Journal of Nanotechnology Author List: Nafisa Noor, Anna Gorbenko, Raihan Sayeed Khan, Helena Silva, Sadid Muneer

Enhancing Programming Variability in Multi-Bit Phase Change Memory Cells for Security

Publication: IEEE Transactions on Nanotechnology Author List: Nafisa Noor, Anna Gorbenko, Raihan Sayeed Khan, Sadid Muneer, Helena Silva

Reset Variability in Phase Change Memory for Hardware Security Applications

Publication: IEEE Transactions on Nanotechnology Author List: Nafisa Noor, Raihan Sayeed Khan, Adam Cywar, Anna Gorbenko, Sadid Muneer, Lhacene Adnane, Ali Gokirmak, Faruk Dirisaglik, Helena Silva, Jake Scoggin, Md. Tashfiq Bin Kashem

Conference Papers

2024## Effects of Cell Aspect Ratio and Applied Pulse Parameters on Resistance Drift in Ge2Sb2Te5 PCM Nanodevices Phase Change Memory Conference: 2024 IEEE Nanotechnology Materials and Devices Conference (NMDC) Author List: Tasneem Mazhar, Sadid Muneer, Nafisa Noor

Finite Element Simulations of Phase Change Memory Devices Using Semiconductor Physics

Phase Change Memory Conference: 2024 IEEE Nanotechnology Materials and Devices Conference (NMDC) Author List: Sadid Muneer, Nafisa Noor

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About UIU

- Why UIU
- Vision Mission Goals
- General Information
- UIU Campus
- Guiding Principles
- Ranking & Accreditation
- Convocation
- Gallery
- Media
- Career
- Contact

Departments

- Dept. of CSE
- B.Sc in Data Science
- Dept. of EEE
- Dept. of Civil Engineering
- Dept. of Pharmacy
- Dept. of English
- Dept. of EDS
- Dept. of MSJ
- SoBE (BBA, AIS, MBA, EMBA)
- Dept. of Economics
- Dept. of BGE

Admission

- Admission
- Tuition Fees & Waiver
- Admission Requirements
- Admission Test Result
- Admission Procedure
- Admission Dates
- International Studentsâ€™ Admission
- Global Opportunities
- International Collaboration
- FAQ

Important Links

- Time Schedule of Shuttle Services
- Student Transportation Service
- Payment Procedure
- Student e-Resources
- Important Contact

Quick Links

- UCAM
- eLMS
- Parent Portal
- Online Classroom Booking
- Degree Verification
- Necessary Forms
- Notice
- News
- Event
- EEE Old Site