

## ASHFAQUE E ALAM

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Conducted Post graduate research on designing and fabrication of energy materials and devices using electrochemical and physical vapour technique. Experienced in teaching and supervising students as part of different academic positions held in Higher Education. Also experienced in Industry environment as an Electronics Engineer. Passionate about knowledge sharing and eager for further multidisciplinary academic opportunities.

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### KEY SKILLS

•**General skills:** Solid-State Physics, Device Physics, Electrochemistry, Instrumentation, Automation.

•**Synthesizing techniques:** Electrodeposition, Chemical Bath deposition, Thermal evaporation, Sputtering

•**Analytical techniques:** UV-Vis, SEM, EDX, XRD, Raman, Electrochemical analysis (Cyclic voltametry, Chronoamperometry), Hall measurement, I-V measurement, C-V measurement, and Quantum efficiency measurement.

•**CAD:** Eagle, TCAD.

•**PROGRAMMING:** C, Ladder logic, Verilog VHDL, basics on Visual BASIC, HTML, MATLAB Simulink.

•**Languages:** Bangla – Mother tongue, English – Professional proficiency (IELTS score 7.5).

•**OTHER:** Agilent VEE, dSpace Control Desk, OriginLab, AWR Microwave Office.

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### EDUCATION & RESEARCH EXPERIENCES

**Sheffield Hallam University (SHU), UK**      *Doctor of Philosophy (PhD)*, 2017-2021 (Awaiting Viva in September)

Fabricated electronic devices using **electrodeposition**, **sputtering** and **thermal evaporation** techniques. Gathered thorough working experience on several experimental methods of material and device characterisation, namely- **SEM, EDX, XRD, Raman, PEC, IPCE** etc. Undertaken Research project on- **Development of next-generation thin-film Solar Cells using electroplated materials**.

**De Montfort University (DMU), UK**      *MSc (Research) Microelectronics & Nanotechnology*, 2011-2014  
Conducted Research project on PV performance optimisation, **Merit**

Experienced cleanrooms and handled medium scale measurement instruments used for nano and micro-electronics research, such as- *FTIR, Spectrophotometer, Hall sensor* etc. Undertaken Research project on- **Design and Development of Carrier Mobility measurement system for performance optimisation of PV Solar Cells**.

#### Core modules

Physics of Semiconductor devices  
Research Methods

Physical and Electrical Measurements  
Computer Aided Design (TCAD)

**De Montfort University, UK**      *BEng (Hons) Electronic Engineering*, 2010 – 2011  
2<sup>nd</sup>Class (Upper Division) with an average of **67%**, 2011

#### Core modules

Level 3    Advanced Digital Design  
            High Frequency Technology

Control & Instrumentation Engineering  
Individual Project

**EDEXCEL, UK**      *Level 5 BTEC HND in Electrical/Electronic Engineering (Communications)*, 2008-2010  
Successfully passed all the modules with 6 Merits and 2 Distinctions, 2010

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### RELEVANT EMPLOYMENT HISTORY

**Sheffield Hallam University (SHU)**      *CARA Fellow, MERI, October 2017-Present*

• Characterisation, analysis, fabrication, and evaluation of electrochemically fabricated solid-state devices. • Conducting laboratory demonstration to undergraduate engineering/ physics students. • Co-supervising BEng and MSc major projects • Attending relevant conferences, academic gatherings, and symposiums.

### Sheffield Hallam University (SHU)

**Laboratory Teacher, Dept. of Engineering and Maths, Jan – April 2020**

- Assisting laboratory sessions for 2<sup>nd</sup> year Physics students.
- Preparing and improving laboratory experiment instruction as requested.
- Answering student queries and assisting problem solving during the lab sessions.

### University of Liberal Arts, Bangladesh (ULAB)

**Lecturer, Department of ETE, January 2015- Cont. (on leave)**

- Conducting taught and laboratory-based programs offered by the Department of Electronic and Telecommunication Engineering (ETE).
- Supervising UG students in final project.
- Arranging and conducting seminars on different academic and technical issues.
- Laboratory management of the Department of ETE.
- Arranging industrial study tours for students.
- Conducting research on low-cost basic measurement instruments.

### Water Software Systems (WSS) Laboratory

**Electronics/Instrumentation Engineer, July 2013- June 2014**

- Testing and adjustments of selected interfaces between the computer control system and the instrumentation panel and other sensors/actuators of a Wastewater plant.
- Designing, implementation and testing of electronic circuits to enable automatic control of the plant using *Simulink* and *dSpace Control Desk* environment.
- Mentoring final year students in BEng individual projects.
- Preparing video tutorial for potential learners of automation.

### Centre for Social Action (CSA), DMU

**Communication Assistant (Fronrunner placement), Feb – June 2013**

- Preparing brief strategic plan for the Centre's website and developing it.
- Preparing the design plan for the centre's website.
- Introducing the relative social media planning for the centre and implementing them.
- Attending regular management meetings and coping with the team requirements.

### Funding & Achievements\*

- Organising member of *International Conference on Energy and Sustainable Futures (ICESF) 2019*
- Regular reviewer at *Journal of Materials Science: Materials in Electronics (JMSE)*
- Best poster, MERI-BMRC poster competition 2018.
- Received PhD fellowship at SHU, with *Doctoral Training Alliance (DTA)*, UK.
- Received VC scholarship based on merit for MSc.

### Training, Workshops and Memberships\*

- *Sheffield Hallam University* Training:
  - HE Teaching Skills for Doctoral Students
- *ULAB* Training and Development:
  - Faculty professional development workshop' 2015 by *Prof. G. B. Ramirez*, UMass Boston
- *Application pending for Associate Fellow of Higher Education Academy (AFHEA).*
- Former Member of *IET* and *IEEE*.

### PUBLICATIONS

#### Articles:

- i. **A. E. Alam**, O. I. Olusola, D. A. Loch, K. Shukla, W. M. Cranton, I. M. Dharmadasa, "Electrodeposited ternary compounds for novel PV application: Optimisation of electrodeposited CdMnTe thin-films as p-type window layer", *Nature Scientific Reports*, December 2020, DOI: 10.1038/s41598-020-78066-y
- ii. I. M. Dharmadasa, **A. E. Alam**, A. A. Ojo and O. K. Echendu, "Scientific complications and controversies noted in the field of CdS/CdTe thin film solar cells and the way forward for further development", November 2019, *JMSE*, DOI: 0.1007/s10854-019-02422-6
- iii. I. M. Dharmadasa, Y. Rahaq, and **A. E. Alam**, "Perovskite solar cells: short lifetime and hysteresis behaviour of current–voltage characteristics", *JMSE*, July 2019, DOI: 10.1007/s10854-019-01759-2
- iv. **A. E. Alam**, W. M. Cranton, and I. M. Dharmadasa, "Electrodeposition of CdS thin-films grown from Cadmium acetate and Ammonium thiosulfate precursor", *JMSE*, January 2019, DOI: 10.1007/s10854-019-00750-1
- v. **A. E. Alam**, A. A. Ojo, J. B. Jasinski and I. M. Dharmadasa, "*Magnesium incorporation in n-CdTe to produce wide bandgap p-type CdTe:Mg window layers*", December 2018, *ChemEngineering*, DOI: 10.3390/chemengineering2040059

- vi. **A. E. Alam**, R. Islam, and I. J. Faria, "Development and validation of a low-cost visible light Spectrophotometer," IEEE Xplore, Sept' 2017, DOI: 10.1109/ICAEE.2017.8255437

#### Conferences:

- i. **A. E. Alam**, A. A. Ojo, J. B. Jasinski and I. M. Dharmadasa, "Development of next-generation electrodeposited solar cells with p -type window layer", ICESF 2019
- ii. **A. E. Alam**, A. A. Ojo and I. M. Dharmadasa, "Development of next-generation electrodeposited solar cells with p -type window layer", PVSAT-15, DOI: 10.13140/RG.2.2.17820.74881
- iii. **A. E. Alam**, A. A. Ojo and I. M. Dharmadasa, "Magnesium incorporation in n-CdTe to produce wide bandgap p-type CdTe:Mg window layers", UK Semiconductor 2018
- iv. P. Biswas and **A. E. Alam**, "Development of Data Acquisition System for Low-Cost Spectrophotometer", DOI: 10.13140/RG.2.2.34597.96481
- v. **A. E. Alam**, R. Islam, and I. J. Faria, "Development and validation of a low-cost visible light Spectrophotometer," 4th International Conference on Advances in Electrical Engineering (ICAEE) 2017

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#### OTHER RELEVANT PROJECTS

- i. **"Instrumentation development for UV-Vis spectrophotometer"**, The project goal was to develop an affordable UV-Vis spectrophotometer from scratch taking possible novel approaches in designing steps, BSc Final Year project: as Project Supervisor, Department of ETE, University of Liberal Arts Bangladesh (ULAB), Dhaka, 2017
- ii. **"Simulation and Development of an affordable switching technique for Van Der Pauw resistivity measurement arrangement"**, Aimed to design and construct a low-cost switching technique for Four probe resistivity measurement, BSc Final Year project: as Project Supervisor, Department of ETE, University of Liberal Arts Bangladesh (ULAB), Dhaka, 2015
- iii. **"Automation Rulez!! for Control System design and Implementation"**, Enabled automation for a wastewater treatment plant consisting of several sensors and actuators, Placement Project: as Instrumentation Engineer, Water Software Systems (WSS) Laboratory, De Montfort University, Leicester, 2013-2014
- iv. **"Design and Development of Carrier Mobility measurement system for performance optimisation of PV Solar Cell"**, The project aimed to design an arrangement to measure carrier mobility for low mobility Solar cell materials. This work has constructed a Hall Mobility measurement Instrument from scratch taking as many technical, theoretical and experimental references as possible into account. MSc Research Project: as MSc Student, Emerging Technologies Research Centre (EMTERC), De Montfort University, Leicester, 2012-2014

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#### STUDENT SUPERVISION & JOURNAL REVIEW

- Co-Supervised 02 BEng, 02 MSc and 02 ERASMUS projects at SHU.
- Supervised 05 Undergrad projects at ULAB.
- Co-supervised 02 Undergrad (BEng) projects at DMU.
- Regular reviewer for the *Journal of Materials Science: Materials in Electronics*

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**HOBBIES & INTERESTS** Writing, Scientific Writing, Reading, Cricket, Music. Blogging, Creative.

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**ACADEMIC & PROFESSIONAL REFERENCES** Available upon request.