Abdullah A. **Amin**

PH.D. CANDIDATE · NON-LINEAR FEA · MULTISCALE-MULTIPHYSICS

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Experience

Computational Physics Group, Case Western Reserve University
Cleveland, OH

GRADUATE RESEARCH ASSISTANT — *Aug. 2013 - Present*

- 1.5 T Conduction cooled MgB_2 based MRI Magnet design using multiscale multiphysics non-linear Finite Element Analysis.
- Magneto optical detection system for gout crystal detection. System is 80% cheaper and capable of identifying false negatives and positives. (Patent filed)

Department of Mechanical & Aerospace Engineering, Case Western Reserve University
Cleveland, OH

GRADUATE TEACHING ASSISTANT — *Aug. 2014 - Dec. 2015*

- Musculo-skeletal Biomechanics: Trained a class of 30 students with ANSYS and Solidworks, assigned homeworks, graded exam papers, advised students for course projects
- Measurement and Instrumentation: Setup and demonstrated experiment to class of 60 students, graded reports
- Senior Project: Advised 10 groups containing two/three students, monitored progress and provided assistance to overcome road blocks.

Department of Mechanical Engineering, The University of Akron
Akron, OH

GRADUATE TEACHING ASSISTANT — *Aug. 2011 - Aug. 2013*

- Mechanical Engineering lab: Lectured a class of 30 students, demonstrated CNC milling machine, explained NC code, manufactured 3D parts using a 3-axis CNC milling machine.
- CAD/CAM: Lectured a class of 80 students, trained students with AutoCAD, Creo/ProEngineering; graded exam papers
- Dynamics & Thermal Science: Graded homeworks and exam papers

MEMS Lab, The University of Akron
Akron, OH

GRADUATE RESEARCH ASSISTANT — *Aug. 2010 - Aug. 2013*

- Conceptualized and microfabricated high throughput 200 µL/min microparticle separation device capable of sorting 5 µm and 10 µm particles.
- Developed droplet microgripper device based on electrowetting capable of manipulating 150 µN objects at elevated temperature of 130 °C and 24 mm Hg vacuum

Department of Textile Engineering, Green University of Bangladesh
Dhaka, Bangladesh

LECTURER — *Nov. 2009 - July. 2010*

- Design, lecture and grade courses to class of 25 students

Department of Engineering, College of Aviation Technology
Dhaka, Bangladesh

LECTURER — *Jan. 2010 - Jun. 2010*

- Design, lecture and grade courses to class of 25 students

Education

CWRU(Case Western Reserve University)
Cleveland, Ohio

PH.D. IN MECHANICAL ENGINEERING — *August 2017*

- GPA: 3.42/4
- Thesis: Multiscale Multiphysics Stress-Strain Modeling for MgB_2 Based Conduction Cooled 1.5 T MRI Magnet System.

UAkron(The University of Akron) *Akron, Ohio*

M.S. in Mechanical Engineering *December 2014*

- GPA: 3.92/4, Cumulative GPA: 3.78/4
- Thesis: High Throughput Particle Separation Using Differential Fermat Spiral Microchannel With Variable Channel Width

BUET(Bangladesh University of Engineering and Technology) *Dhaka, Bangladesh*

B.S. in Mechanical Engineering *Mar. 2009*

- CGPA: 3.44/4 and class rank: 31/117
- Thesis: Design, Improvement, Modification & Fabrication of Mechanisms and Control Systems of Robots for ABU ROBOCON.

Honors & Awards

Nov. 2016	**VentureWell Stage I grant**, VentureWell	*Boston; USA*
Oct. 2016	**Runner Up**, Superconductivity News Forum (SNF), ASC 2016	*Colorado, USA*
Sep. 2016	**Financial Assistance**, Applied Superconductivity Conference	*Colorado, USA*
Jun. 2016	**Fellowship**, MIT Professional Education, Multiscale Material Design	*Boston, USA*
May 2016	**Graduate Student Travel Award**, Graduate School, Case Western Reserve University	*Cleveland, OH*
May 2016	**ISMRM Educatinal Stipend**, 23rd annual meeting of ISMRM	*Singapore*
May 2015	**ISMRM Educatinal Stipend**, 22nd annual meeting of ISMRM	*Toronto, Canada*
Dec. 2011	**Sweden Bangladesh Travel Grant**, Government of Bangladesh	*Dhaka, Bangladesh*
Aug. 2008	**University Blazer**, Bangladesh University of Engineering and Technology	*Dhaka, Bangladesh*
2004-2008	**Technology Award**, Government of Peoples Republic of Bangladesh (2004 2008)	*Dhaka, Bangladesh*

Publications

Journals

- Deissler R J, Baig T, Charles P, Amin A, Doll D, Tomsic M and Martens M 2017 A Computational Study to Find an Optimal RRR Value for a 1.5 T Persistent-Mode Conduction-Cooled MgB2 MRI Magnet from a Quench Protection Point of View IEEE Trans. Appl. Supercond. 99
- Baig T, Al Amin A, Deissler R J, Sabri L, Poole C, Brown R W, Tomsic M, Doll D, Rindfleisch M, Peng X and others 2017 Conceptual designs of conduction cooled MgB2 magnets for 1.5 and 3.0 T full body MRI systems Supercond. Sci. Technol. 30 043002
- Amin A A, Baig T N, Deissler R J, Sabri L A, Doll D, Tomsic M, Akkus O and Martens M A 2017 Mechanical Analysis of MgB2 Based Full Body MRI Coils Under Different Winding Conditions IEEE Trans. Appl. Supercond. 27 1–5
- Deissler R J, Baig T, Poole C, Amin A, Doll D, Tomsic M and Martens M 2016 Numerical simulation of quench protection for a 1.5 T persistent mode MgB2 conduction-cooled MRI magnet Supercond. Sci. Technol. 30
- Amin A A, Baig T, Deissler R J, Yao Z, Tomsic M, Doll D, Akkus O and Michael Martens 2016 A multiscale and multiphysics model of strain development in a 1.5 T MRI magnet designed with 36 filament composite MgB 2 superconducting wire Supercond. Sci. Technol. 29 055008
- Mojumder S, Amin A A and Islam M M 2015 Mechanical properties of stanene under uniaxial and biaxial loading: A molecular dynamics study J. Appl. Phys. 118 124305
- Al Amin A, Jagtiani A, Vasudev A, Hu J and Zhe J 2011 Soft microgripping using ionic liquids for high temperature and vacuum applications J. Micromechanics Microengineering 21 125025

Conferences

- AA Amin, B Bhusal , TN Baig , RJ Deissler , L Sabri , O Akkus , and MA Martens, “A comparative study of coil winding techniques of a full body 1.5 T MgB based MRI magnets.,” ISMRM 25th annual meeting & exhibition, Hawaii, USA. April, 2017.
- AA Amin, TN Baig, RJ Deissler, L Sabri, D Doll, M Tomsic, O Akkus and MA Martens, “Effect of Mechanical Support Conditions of Winding on the Strain Development of a Composite MgB2 Based Full Body MRI Coil,” Applied Superconductivity Conference, Denver, Colorado, USA. 2016.
- RJ Deissler, TN Baig, CR Poole, AA Amin, D Doll, M Tomsic, M Martens, ”A Computational Study to Find an Optimal RRR Value for a 1.5 T Persistent-Mode Conduction-Cooled MgB2 MRI Magnet from a Quench Protection Point of View” Applied Superconductivity Conference, Denver, Colorado, USA. 2016.
- AA Amin, TN Baig, RJ Deissler, D Doll, M Tomsic, O Akkus and MA Martens, “Variation in strain characteristics for multiscale multi-physics models of a 1.5T conduction cooled MRI system based on a 36 filament MgB2 composite wire,” ISMRM 24th annual meeting & exhibition, Singapore City, Singapore. May, 2016.
- AA Amin, TN Baig, Z. Yao and MA Martens, “Stress and Strain Sensitivity Study of 1.5T Conduction Cooled MgB2 Magnet Design” ISMRM 23rd annual meeting & exhibition, Toronto, Canada. May, 2016.

Extracurricular Activity

Web Developer

BSA UAkron, BUET Technology Review, Tissue Fabrication and Mechanobiology Lab — *September. 2010 - PRESENT*

- Designed and maintained website for the organizations and labs

Athlete — *Cleveland, OH*

Hashlingden Cricket Club — *Aug. 2010 - Present*

- Participated in Midwest Cricket Tournament in T20 and 35 over matches

Founder, Developer and Writer — *Dhaka, Bangladesh*

BUET Technology Review (www.buetech.com) — *Jan. 2014 - PRESENT*

- Online based technology portal centered at Bangladesh. The technology portal reports on locally developed technologies to impact the social standards of Bangladesh

Adviser — *Dhaka, Bangladesh*

Multiscale Mechanical Modeling and Research Network (https://sites.google.com/site/buetmmmrn/) — *Apr. 2013 - PRESENT*

- Train and prepare undergraduate student for advanced graduate school research works
- Published one refereed journal article

Founder and Idea lead — *Dhaka, Bangladesh*

Obodharon (www.youtube.com/obodharon) — *Jan. 2013 - PRESENT*

- Explain science to school students with explanatory animation video.
- Published 9 videos totaling 8000 subscribers and 350k views

Popular Science Writer — *Dhaka, Bangladesh*

Zero to Infinity (http://z2i.org/) — *Mar. 2013 - May 2016*

- Published three articles, including one magazine feature

Treasurer — *Akron, Ohio*

Bangladesh Student Association — *Aug. 2011 - Aug. 2013*

- Maintained a budget for the student organization.
- Developed an online balance monitoring system for the members.

Senator — *Akron, Ohio*

College of Engineering, UAkron — *Mar. 2013 - Aug. 2013*

- Representative from the college of engineering to the graduate student government.

CFD Consultant *Akron, Ohio*

Zips Racing Team, UAkron *Aug. 2011 - Nov. 2012*

- Lift analysis of rear spoiler for the racing car using ANSYS Fluent.

Skills

Micro-fabrication	Clean Room (Class 1000), Electrospinning, Plasma Bonding, Wet etching, Electroplating.
CAD,CAM,FEA	reo Parametric, SolidWorks, AutoCAD, CATIA V5, Abaqus, ANSYS APDL, Comsol, Hyperworks, Hypermesh, ICEM.
Programming	Fortran, C, Java, HTML & CSS, XML, SQL, Matlab, MathCAD.
Machine Tools	Four-axis CNC Milling, Milling Machine, Lathe Machines, Bench Drilling, Mechanical wrenching.
Electronics	Arduino, PIC 18F452, Atmel AT 89C51ED2, Atmel AVR ATmega 8 & 16.
Imaging	Optical microscopy, Fluorescent microscopy, Atomic Force Microscopy, Surface profilometer.

References

Dr. Michael Martens Department of Physics, Rock 105 B, Case Western Reserve University, Tel: 216.368.4123, email: michael.martens@case.edu

Dr. Ozan Akkus Department of Mechanical & Aerospace Engineering, Glennan 615, Case Western Reserve University, Tel: 216.368.4175, email: ozan.akkus@case.edu