MOHAMMAD I. ABUSHAMS

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EDUCATION

Central Michigan University Doctor of Philosophy (**PhD**) Science of Advanced Materials	Mt. Pleasant, Michigan, USA **Awarded**: August-2017 (GPA ~ 3.96)
Central Michigan University Master of Science (**MS**) Engineering *with concentration in* Materials Engineering	Mt. Pleasant, Michigan, USA **Awarded:** December-2017 (GPA ~ 3.96)
Central Michigan University Master of Arts (**MA**) Industrial Management and Technology	Mt. Pleasant, Michigan, USA **Awarded**: May-2013 (GPA ~ 3.94)
University of Jordan Bachelor of Science (**BSc**) Mechatronics Engineering	Amman, Jordan **Awarded**: May-2010

WORK EXPERIENCE

Assistant Professor — February (2018) – present
Industrial Engineering Department
German Jordanian University
Amman, Jordan.

Exchange Coordinator — September (2019) – September (2021)
Industrial Engineering Department
German Jordanian University
Amman, Jordan.

Post-Doctoral Associate — August (2017) – January (2018)
Mechanical Engineering Department
Central Michigan University
Mount Pleasant, MI, USA

Full Time Graduate Assistant (TA/RA) — August (2012) – August (2017)
College of Science and Engineering
Central Michigan University
Mount Pleasant, MI, USA

Maintenance Engineer ***(internship)*** — April-July (2011)
Danish Jordanian Dairy Corporation
Amman, Jordan.

TEACHING EXPERIENCE

Taught courses:

- Project Management
- Manufacturing Processes
- Manufacturing Processes Lab
- Material Science
- Measurement and Instrumentation Lab
- Digital Circuits
- Computer Aided Problems Solving Engineering Lab
- Circuit Lab
- Elements of Machine Design

Areas that can be taught: *Fundamentals of Engineering, Engineering Design, Technology and society, Production Concepts, Industrial Management Principles, Material Science, Engineering Materials, Dynamics, Statics, Mechanics of Materials, Materials and Manufacturing Processes, FEA, Measurements and Instrumentation, Electrical circuits, Digital circuits, Electronics*

**** Proposed courses:*** *(1) Microstructure and properties of engineering materials, (2) Phases, transformation, and solidification, (3) Modeling of Materials (4) Materials in the nanoscale.*

RESEARCH EXPERIENCE

*Graduate Research Assistant, College of Science and Engineering, Central Michigan University, Mount Pleasant, MI. (**Research interests**: Deformation behavior and properties of nanocrystalline materials, composite Structures, irradiation induced damage of structural materials, nuclear materials, atomistic and multi-scale modeling of crystal defects, large-scale computer simulations, linear vibrations).*

- Fall2012-Spring2013: Graduate research assistantship in school of engineering and technology, college of science and engineering.
- Fall2014-Spring2015-Summer (2013, 2014, 2015, 2016, 2017): Graduate research fellowship in science of advanced materials department.
- Summer2016: Participated in the research experience for teachers (RET) program that funded by the NSF to engage high school teachers in engineering research for six-weeks through the summer.
- Student Supervision:
  - Undergraduate students, Industrial Engineering Department, German Jordanian University.
  - Jeffery M. Moran (Undergraduate CMU, senior design project student)
  - Kawthar R. Khamis (Undergraduate CMU, senior design project student)
- DAAD student mobility funded program 2021.
- College of Scientific Research incentives for published research.
- Deanship of Scientific Research Seed Grant 2023.

THESIS AND DISSERTATION

- **PHD** – DOCTORAL DISSERTATION: Investigation of the Irradiation Damage and Nanoindentation Response of Fe-Cr Using MD Simulation.
- **MA** - MASTER THESIS: Free Vibration of Thin Film Cantilever Beam.

PUPLICATIONS

JOURNAL ARTICLES

1. **Mohammad Abu-Shams**, Qutaiba Altwarah, Deformation Characteristics and Dislocation Quantification of Aluminum-Magnesium Alloy with Different <001> Tilt Grain Boundaries Using MD Simulation, Materials Today Proceedings. ***(2023)***

2. **M. Abu-Shams**, S Ramadan, S Al-Dahidi, A Abdallah, Scheduling Large-Size Identical Parallel Machines with Single Server Using a Novel Heuristic-Guided Genetic Algorithm (DAS/GA) Approach, Processes. ***(2022)***

3. **Mohammad Abu-Shams**, Jeffery Moran, Ishraq Shabib, Displacement cascade evolution in tungsten with pre-existing helium and hydrogen clusters: a molecular dynamics study, International Journal of Material Research. ***(2020)***

4. **M. Abu-Shams**, I. Shabib, Primary Radiation Damage of Fe-10%Cr Models under Uniaxial, Biaxial, and Hydrostatic Pressure Using MD Simulation, Journal of Nuclear Materials. **(*2018)***

5. **M. Abu-Shams**, I. Shabib, Effects of Voids on Nanoindentation Response of Fe-Cr Alloys using MD Simulation, Materials Express. **(*2017) ** *this paper has been shortlisted for the cover of the journal next issue.***

6. **M. Abu-Shams**, W. Haider, I. Shabib, Evolution of Displacement Cascades in Fe-Cr Structures with Different [001] Tilt Grain Boundaries. Radiation Defects and Effects in Solids. **(*2017)***

7. I. Shabib, **M. Abu-Shams**, M. Khan, Nanoindentation Response of Fe-10%Cr Bi-crystal Structures with $\Sigma5\langle001\rangle$ and $\Sigma3\langle110\rangle$ Tilt Boundaries: An Atomistic Study. International Journal of Computational Materials Science and Engineering. **(*2015)***

8. M. Qatu, **M. Abu-Shams**, M. Hajianmaleji, Application of Laminated Composite Materials in Vehicle Design Theories and Analyses of Composite Beams. Society of Automotive Engineers. **(*2013*)**

PEER REVIEWED CONFERENCE PROCEEDINGS

1. **M. Abu-Shams**, I. Shabib, Irradiation Induced Damage of Fe-10%Cr under Uniaxial Pressure. ASME International Mechanical Engineering Congress and Exposition, Houston, **Texas**, **(*2015)***.
2. I.Shabib, **M. Abu-Shams**, M. Khan, Lattice Thermal Conductivity of Fe-Cr Alloys with

<001> Tilt Boundaries: An Atomistic Study. ASME International Mechanical Engineering Congress & Exposition, Montreal, Quebec, **Canada**, **(*2014)***.

3. **M. Abu-Shams**, I.Shabib, Deformation Characteristics and Stress-Strain Response of Fe-Cr structure with <001> Tilt Grain Boundary Using MD Simulation. 17th U.S. National Congress Theoretical and Applied Mechanics, Michigan State University, **Michigan**, **(*2014)***.

PRESENTATIONS

1. Deformation Characteristics and Stress-Strain Response of Al-Mg structure with <001> Tilt Grain Boundary Using MD Simulation. The 6th International Conference on Materials Engineering and Nanotechnology (**2022**), **Malaysia**.
2. Effect of He/H defects in W during irradiation: An atomistic study. *5th International Conference on Atomic and Nuclear Physics* (**2019**), Chicago, **Illinois**.
3. Nanoindentation Response of Fe-10%Cr Structures with Voids: An Atomistic Study. *The Minerals, Metals, and Materials Society* (**2017**), Marriott Marquis and Marina, San Diego, ***California***.
4. *Student Research and Creative Endeavors Exhibition (SCREE)* (***2014, 2015, 2016, 2017***), Central Michigan University, Mount Pleasant, ***Michigan***.
5. Irradiation Induced Damage of Fe-10%Cr under Uniaxial Pressure. *International Mechanical Engineering Congress & Exposition* (**2015**), George R. Brown Convention Center, Houston, ***Texas***.
6. Evolution of Displacement Cascades in Fe-Cr Structures with Different <001> Grain Boundary. *Material Science and Technology* (**2015**), Greater Columbus Convention Center, Columbus, ***Ohio***.
7. Defects Production in Displacement Cascades of Fe-Cr Alloys Using Molecular Dynamics (MD) Simulation. *Midwest Graduate Research Symposium, University of Toledo* (**2015**), Toledo, ***Ohio***.
8. Deformation Characteristics and Stress-Strain Response of Fe-Cr structure with <001> Tilt Grain Boundary Using MD Simulation. *17th US National Congress on Theoretical and Applied Mechanics* (**2014**), Michigan State University, East Lansing, ***Michigan***.
9. Application of Laminated Composite Materials in Vehicle Design: Theories and Analyses of Composite Beams. *Society of Automotive Engineers Noise and Vibration Conference and Exhibition* (**2013**), Grand Rapids, ***Michigan***.

AFFILIATIONS

American Society for Mechanical Engineers (ASME)
American Society of Automotive Engineers (SAE)
Sponsored affiliates at University of Michigan
Jordan Engineering Association (JEA)
Central Michigan Alumni Association

TRAININGS

1- SEM/TEM

2-LMS virtual labs acoustics.

3- Fire Safety Training.

4- Occupational Safety and Health Administration training.

5- Responsible Conduct Research Training.

SOFTWARE KNOWLEDGE

AUTOCAD	AUTOMATION STUDIO	SIMULINK
ANSYS/SOLIDWORKS	LABVIEW	MATLAB / MINITAB
LAMMPS/UNIX	OVITO/Atom-Eye	LATEX / OFFICE

REFERENCES

Available upon request