Raja A., Mohamad

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EDUCATION

2024 – Present **Delft University of Technology (TU Delft)**, Delft, Netherlands
Doctor of Philosophy in Faculty of Aerospace Engineering, PhD
Department of Aerospace Structures and Materials (ASM)
Advisors: Dr.Boyang Chen & Dr. Clemens Dransfeld

2022 – 2024 **Korea Advanced Institute of Science & Technology (KAIST**), Daejeon
Master of Science in Mechanical Engineering, MSc
Advisor: Prof. Seong Su Kim (Mechanical Design Lab. with Advanced Materials)
GPA 3.9/4.3 **|** (96.0/100)

2017 – 2021 **American University of Sharjah (**ABET Accredited**)**, Sharjah, United Arab Emirates
Bachelor of Science in Mechanical Engineering, BSc
Graduation Date: Spring 2021
GPA 3.76/4.0 **(Magna Cum Laude)**

ACHIEVEMENTS

- Co-author Best paper award at Korean Society for Composite Materials (KSCM) Fall Conference, 2023
- Best paper award at Korean Society for Composite Materials (KSCM) Spring Conference, 2023
- KAIST Scholarship for Graduate Students **($24,000)**, 2022-2024
- Awarded from Korea Invention Promotion Association, OASIS Program, 2022
- 2nd place in the largest Undergraduate Research Competition in the MENA region (URC), 2021
- Awarded the Undergraduate Research Grant (URG21) Research Team Leader**,** AY, 2021
- Completed MIT: Innovation Leadership Bootcamp, 2021
- 2nd place in the Mechanical Engineering Senior Design Competition, 2021
- Vice President of Engineering Honors Society (EHS), top 1/5th of senior engineering class, 2020
- Chancellor's list Academic Award, 2017– 2018, 2019-2020, 2021-2022
- Dean's List Academic Award, Fall 2017-Spring 2021
- Awarded the Distinguished Student Scholarship **($25,000)**, 2017- 2021
- Awarded a scholarship from the Arab World's largest Education Fund **($100,000)** (Abdulla Al Ghurair Foundation for Education), 2017- 2021
- Awarded from the Ministry of Presidential Affairs for being among the top students in high school (99.6/100), 2017 – 2018

WORK EXPERIENCE

Aerospace Structures and Materials Department,(PhD Researcher), TU Delft, Delft, Netherlands

September 2024- present
- Currently a PhD researcher in the Faculty of Aerospace Engineering at TU Delft, working on the "Luchtvaart in Transitie" (Aviation in Transition) project

Mechanical Engineering Department,(Researcher), KAIST, Daejeon, S. Korea

March 2022 – July 2024
- Worked as a researcher in Mechanical Design Lab. with Advanced Materials (MDAM) under the supervision of Prof. Seong Su Kim
- Research Interests: Multifunctional Structures, Thin-film Mechanics, Composite Materials, Semiconductor Packaging, Machine Learning, Metamaterials, Functional & Intelligent Materials

Mechanical Engineering Department,(Course Grader), AUS, Sharjah, UAE

January 2020 – May 2020
- Worked as a grader for MCE 321 (Mechanical Design), by marking papers and identifying weaknesses in understanding to help the professor better evaluate the performance of the students

WORK EXPERIENCE CONT'D

Nissan Arabian Automobiles Co.,(Service Technician), Fujairah, UAE

December 2019 – January 2020

- Communicated with customers, and conducted a thorough inspection to the vehicle to analyze the issues and help in proposing an efficient repairing plan
- Organized work records, and followed a checklist which demonstrated that all mechanical and electrical inspections are satisfied
- Assisted in repairing, replacing, and ordering automobile components

Mechanical Engineering Department,(Research Assistant), AUS, Sharjah, UAE

January 2019 – May 2020

- Involved with professors in a scientific research about the relation of capillary effect to the compaction factor of sand, and the sand grain size
- Designed the experimental setup, collected, and filtered the appropriate sand grains, conducted several experiments, interpreted, and reported the results

PUBLICATIONS & PATENTS

1. Wonvin Kim, Su Hyun Lim, Wonki Kim, Hyeongseong Jo, **Mohamad A. Raja**, Seong Su Kim. "A Study on the Water- lubricated Composite Journal Bearing Including the Turbulence, Inertial Effect, and the Elastic Deformation of the Composite," Korean Society of Tribologists and Lubrication Engineers (KSTLE), Jeju, Korea, 2022.04

2. **Mohamad A. Raja**, Ahmed T. Hamada, Mohammed Nazzal†, Fadi Fawzi, Bassem Omar, "Design and Optimization of a Fully Compliant Flexure Hinge Based Soft Prosthetic Hand", Advances in Science and Engineering Technology, 5th HCT International Multi-Conferences (IEEE ASET, Dubai, UAE) 2023.02

3. **Mohamad A. Raja**, Su Hyun Lim, Doyun Jeon, Seong Su Kim†, "Design of Multifunctional Structural Composite Battery using Interfacial Prediction and Multiphysics Modelling", Korean Society for Composite Materials (KSCM), Jeju, Korea, 2023.04 ***[Best Paper Award]***

4. Doyun Jeon, Su Hyun Lim, **Mohamad A. Raja**, Seong Su Kim†, "Design of Sandwich Type Structural Battery Capable of Pressurization to Improve Capacity Fade of Lithium Ion Battery", Korean Society for Composite Materials (KSCM), Jeju, Korea, 2023.04

5. Ha Eun Lee, Hyeonseong Jo, **Mohamad A. Raja** and Seong Su Kim†, "Development of a Novel Composite Battery Exterior for the Sustainability of Li-ion Pouch Cell at High C-rate Conditions", The 18th International Conference on Nano/Micro Engineered and Molecular Systems (IEEE NEMS), Jeju, Korea 2023.05

6. H. Hong, K.I. Jeong, W.K. Kim, **Mohamad A. Raja**, and S.S. Kim†, "Vibration Isolators of Quasi-zero Stiffness Metamaterials with High-load Carrying Capacity and Self-sensing", International Conference on Composite Materials (ICCM), Belfast, Ireland, 2023.07

7. **Mohamad A. Raja**, Su Hyun Lim, Doyun Jeon, Hyunsoo Hong, Inyeong Yang, Sanha Kim, Seong Su Kim†, "An Investigation of Interfacial Strength and Matrix Plasticity in Epoxy-based Solid Polymer Electrolytes for Structural Composite Batteries" Composites Research, 2023; 36(6): 416-421.

8. **Mohamad A. Raja**, Su Hyun Lim, Doyun Jeon, Ha eun Lee, Seong Su Kim†, "Micromechanics Modelling of Interfacial Strength and Matrix Plasticity in Epoxy-based Solid Polymer Electrolytes for Carbon Fiber Reinforced Structural Composite Batteries" Korean Society of Mechanical Engineers (KSME), 2023.11

9. Doyun Jeon, Su Hyun Lim, **Mohamad A. Raja**, Seong Su Kim†, "Design of Sandwich Type Structural Battery Skin with Integrated Pressurization System for Life Extension" Korean Society of Composite Material (KSCM), 2023.11 ***[Best Paper Award]***

10. Doyun Jeon, Jae-Moon Jeong, Su Hyun Lim, **Mohamad A. Raja**, Seong Su Kim†, "Design of Sandwich Type Structural Battery capable of Pressurization and Thermal Management System" Korean Society for Aeronautical and Space Science (KSAS), 2023.11

PUBLICATIONS & PATENTS CONT'D

11. **Mohamad A. Raja**, etc. al, "Thin, Uniform, and Highly-Packed Multifunctional Structural Carbon-Fiber Composite Battery Lamina Informed by Solid Polymer Electrolyte Cure Kinetics", Accepted, 2024. 09 ***[Journal Supplementary Cover]***

12. **Mohamad A. Raja**, Wonki Kim, Wonvin Kim, Seong Su Kim, "Computational Micromechanics and Machine Learning-Informed Design of Composite Carbon Fiber-Based Structural Battery for Multifunctional Performance Prediction", In-Progress, 2024.

13. **[Patent]** Curved Composite Modular Pack Design & Manufacturing for High-Performance Batteries, Korean Patent Registration Pending No.10-0006914

LANGUAGES

- English [Fluent (IELTS Score: 8)] // Arabic [Native]

EXTRACURRICULAR ACTIVITIES

- MIT: Innovation Leadership Bootcamp
  - Completed a 10-week innovation bootcamp delivered by MIT, to enhance my entrepreneurial, problem-solving, and leadership skills
- First-Year Experience" FYE" Ambassador
  - Supported first-year students by offering them opportunities to engage meaningfully and learn skills that promote academic success
- Peer Leader in the Student Leadership Program (SLP)
  - Coached, assisted, and guided first-year students during orientation week to ease their transition into college life
- Treasurer of the IEEE SIGHT AUS Chapter
  - Worked on a humanitarian project, aimed at using the leverage of technology for sustainable development by inspiring and teaching orphan children about STEM major
- Vice President of the Engineering Honors Society (EHS), top 1/5th of senior engineering class
- Member of the Institution of Mechanical Engineers (IMechE), 2020- Present
- Frequent Volunteer in the Community Service Department (+ 100 hours)

REFERENCES

References available upon request