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 & HONORS

- **Best Paper Award** — Korean Society for Composite Materials Conference, 2025 (1st author)
- **Journal Cover** — ACS Applied Materials & Interfaces, 2025 (1st author)
- **Journal Cover** — ACS Applied Materials & Interfaces, 2024 (1st author)
- **Best Paper Award**—Korean Society for Composite Materials, Fall Conference, 2023 (co-author)
- **Best Paper Award** — Korean Society for Composite Materials Spring Conference, 2023 (1st author)
- **KAIST Scholarship for Graduate Students ($24,000)**, 2022 – 2024
- **Korea Invention Promotion Association** — OASIS Program Award, 2022
- **2nd Place** — Largest Undergraduate Research Competition in the MENA region (URC), 2021
- **Undergraduate Research Grant (URG21) ($3,000)** — Research Team Leader, 2021
- **MIT Innovation Leadership** Bootcamp — Entrepreneurship Certificate, 2021
- **2nd Place** — AUS Mechanical Engineering Senior Design Competition, 2021
- **Vice President** — Engineering Honors Society, top 1/5th of senior engineering class, 2020 – 2021
- **Chancellor's List Academic Award** — 2017–2018, 2019–2020, 2021–2022
- **Dean's List Academic Award** — Fall 2017 – Spring 2021 (every semester)
- **Distinguished Student Scholarship ($25,000)**, 2017 – 2021
- **Abdulla Al Ghurair Scholarship ($100,000)** — Arab World's largest education fund, 2017 – 2021
- **Ministry of Presidential Affairs Award** — Top students nationwide in high school (99.6/100), 2017

WORK EXPERIENCE

September 2024- present
PhD Researcher—Aerospace Structures and Materials Department, TU Delft, The Netherlands
- Researcher in the Faculty of Aerospace Engineering, working on the "Luchtvaart in Transitie" (Aviation in Transition) project
- Research focus: deep learning and computational micromechanics for large-scale aerospace-grade composite structures

March 2022 – July 2024
MS Researcher—Mechanical Design Lab. with Advanced Materials (MDAM), KAIST, South Korea
- Research Interests: Multifunctional Structures, Thin-film Mechanics, Composite Materials, Machine Learning, Metamaterials, Functional & Intelligent Materials

January 2020 – May 2020
Course Grader—Mechanical Engineering Department, American University of Sharjah, UAE
- Grader for MCE 321 (Mechanical Design): Evaluated coursework and assisted with student inquiries

WORK EXPERIENCE CONT'D

January 2019 – May 2020

Research Assistant—Mechanical Engineering Department, American University of Sharjah, UAE

- Collaborated with faculty on research relating capillary effects to sand compaction and grain size
- Designed experimental setup, conducted experiments, filtered sand grain samples, and reported results

December 2019 – January 2020

Service Technician—Nissan Arabian Automobiles Co., Fujairah, UAE

- Inspected vehicles, proposed efficient repair plans, organized work records, and assisted in component repair and replacement

PUBLICATIONS & PATENTS

Journal Articles

- Computational Micromechanics and Machine Learning-Informed Design of Composite Carbon Fiber-Based Structural Battery for Multifunctional Performance Prediction
  Mohamad A. Raja et al., ACS Appl. Mater. Interfaces 2025, 17, 13, 20125–20137
- Thin, Uniform, and Highly Packed Multifunctional Structural Carbon Fiber Composite Battery Lamina Informed by Solid Polymer Electrolyte Cure Kinetics
  Mohamad A. Raja et al., ACS Applied Materials & Interfaces, 2024, 16, 43, 59128–59142
- An Investigation of Interfacial Strength in Epoxy-based Solid Polymer Electrolytes for Structural Composite Batteries
  Mohamad A. Raja et al., Composites Research, 2023, 36, 6, 416-421

Conference Papers & Presentations

- Development of solid polymer electrolyte-based carbon fiber structural battery composites and their multifunctional performance prediction, *Spring Conference of the Korean Society for Composite Materials (KSCM), Jeju, Korea*, 2025
  Mohamad A. Raja, S.H. Lim, W. Kim, W. Kim, J. Lee, S.S. Kim
- Advanced Functional Composites: Optimized Ultrathin CF-based Multifunctional Structural Battery with Integrated Bi-phasic Solid Polymer Electrolyte and Enhanced Packing Density, *Spring Conference of the Korean Society for Mechanical Engineers (KSME), Jeju, Korea*, 2024
  Mohamad A. Raja, and Seong Su Kim
- The Design of Sandwich-Type Structural Battery Face Sheets with Pressurization Function for Enhanced Lifespan, *Fall Conference of Korean Society for Composite Materials (KSCM), Jeju, Korea*, 2023
  Doyun Jeon, Su Hyun Lim, **Mohamad A. Raja**, and Seong Su Kim
- Design of Sandwich-Type Structural Batteries with Pressurization and Temperature Management Functions, *Fall Conference of the Korean Society for Aeronautical and Space Science (KSAS), Vivaldi Park, Korea*, 2023
  Doyun Jeon, Jae-moon Jeong, Su Hyun Lim, **Mohamad A. Raja**, and Seong Su Kim
- Micromechanics Modelling of Interfacial Strength and Matrix Plasticity in Epoxy-based Solid Polymer Electrolytes for Carbon Fiber Reinforced Structural Composite Batteries, *Fall Conference of the Korean Society for Mechanical Engineers (KSME), Incheon, Korea*, 2023
  Mohamad A. Raja, Su Hyun Lim, Doyun Jeon, Ha Eun Lee, and Seong Su Kim
- Vibrational Isolator of quasi-zero stiffness metamaterials with high loading-carrying capacity and self-sensing, *23rd International Conference on Composite Materials (ICCM 23)*, 2023
  Hyunsoo Hong, Kwang Il Jeong, Wonki Kim, **Mohamad A. Raja**, Seong Su Kim

- Development of novel composite battery exterior for the sustainability of Li-ion pouch cell at high C-rate conditions, *18th IEEE International Conference on Nano/Micro Engineered and Molecular Systems (IEEE NEMS)*, 2023
  Ha Eun Lee, Hyeonseong Jo, **Mohamad A. Raja**, Seong Su Kim
- Design of a Pressurizable Sandwich-Structured Battery for Improved Capacity Retention, *Spring Conference of the Korean Society for Composite Materials (KSCM), Jeju, Korea*, 2023
  Doyun Jeon, Su Hyun Lim, **Mohamad A. Raja**, and Seong Su Kim*
- Design of Multifunctional Structural Composite Battery using Interfacial Prediction and Multiphysics Modelling, *Spring Conference of the Korean Society for Composite Materials (KSCM), Jeju, Korea*, 2023
  Mohamad A. Raja, Su Hyun Lim, Doyun Jeon, and Seong Su Kim*
- Design and Optimization of a Fully Compliant Flexure Hinge Based Soft Prosthetic Hand, *Advances in Science and Engineering Technology (ASET), 5th HCT International Multi-Conferences, Dubai, UAE*
  Mohamad A. Raja, Ahmed T. Hamada, Mohammed Nazzal, Fadi Fawzi, Bassem Omar
- A Study of the Water-lubricated Composite Journal Bearing Including the Turbulence, Inertial Effect, and the Elastic Deformation of the Composite, *Spring Korean Society of Tribologists and Lubrication Engineers (KSTLE), Jeju, Korea*, 2022
  Wonvin Kim, Su Hyun Lim, Wonki Kim, Hyeonseong Jo, **Mohamad A. Raja**, Seong Su Kim

Patents

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

LANGUAGES

- English [Fluent (IELTS Score: 8; C2)] // Arabic [Native] // Dutch [Beetje]

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 on website: mohamadraja.com