

Ahmad Ravangard

PhD Student in Mechanical Engineering
Composite Modeling and Manufacturing Group
Department of Mechanical & Aerospace Engineering
Old Dominion University, Norfolk, VA, USA

Contact Information

Email: arz.ravangard@gmail.com | arava001@odu.edu
Phone: +1 (757) 632-5976
Profiles: LinkedIn | Google Scholar | Website | CMM Group

Professional Summary

Ph.D. candidate in Mechanical Engineering with a focus on advanced composite materials, process modeling, and simulation-driven manufacturing. My research explores the relationships between processing conditions, material response, microstructural evolution, and final structural performance. I am particularly interested in understanding how defects emerge during manufacturing and how they can be predicted, controlled, and mitigated through improved material design and process optimization. My work combines physics-based modeling, computational analysis, and experimental validation at a conceptual level to support the development of more reliable, manufacturable, and high-performance composite structures.

Skills

Programming: MATLAB, Python, R, Fortran, C++, Wolfram Mathematica, Bash, Linux/Unix

Version Tracking: Git, DVC, GitHub

HPC: Linux clusters, SLURM/PBS, Bash job scripts, modules, queues, FEA/CFD workflows

AI/CV: CNN segmentation, microstructure analysis, preprocessing, model evaluation

Simulation, CAD & Visualization: FEA/Multiphysics: Abaqus, ANSYS, DigiMAT; CFD/LBM: OpenFOAM, OpenLB; CAD: CATIA, SOLIDWORKS, Autodesk Inventor; Post-processing & Image Analysis: Tecplot, OpenSim, GOM Snap/Correlate, ImageJ

Writing & Design: LyX, L^AT_EX, Microsoft Package

Experimental Tools: MTS, Digital Image Correlation (DIC), Dynamic Mechanical Analysis (DMA), Differential Scanning Calorimetry (DSC), SEM, Digital Optical Microscopy, Heat Press, Autoclave

Education

Ph.D. in Mechanical Engineering Dec 2022–Present
Old Dominion University, Norfolk, VA
GPA: 3.88/4.0

M.Sc. in Aerospace Engineering Oct 2013–Feb 2016
University of Tehran, Tehran, Iran
GPA: 3.9/4.0

In Progress Projects

1. **A BGKW-Informed Reduced-Conductance Framework for Rarefied Gas Evacuation and Void Collapse in Closing OOA Prepreg Micro-Channels.** Manuscript in preparation.
2. **Selective Interlaminar Toughening for Improved Strength and Reduced Notch Sensitivity in Open Hole CFRP Laminates Interleaved with Thin PPS Thermoplastic Veils.** Manuscript in preparation.
3. **Automated Detection and Dimensional Characterization of Tow-Gaps in Automated Fiber Placement (AFP) Laminates Using Image Processing and Deep Learning.** Manuscript in preparation.

Publications

1. A. Ravangard, E. Ebrahimi, M. I. Ibne Wahid, A. Kravchenko. **Enhancing Open Hole Tension Strength in Carbon Fiber Composites with Thermoplastic Veil Interlayers.** *SPE ANTEC 2026 - Annual Technical Conference of the Society of Plastics Engineers*, 2026.
2. A. Ravangard, K. Celebi, S. G. Kravchenko, O. G. Kravchenko. **Mitigating Out-of-Plane Fiber Waviness in AFP Laminates with Tow-Gaps via Selective Placement of Thermoplastic Veils.** *Fibers*, 13(11):145, 2025.
3. D. W. Mulqueen, A. Ravangard, J. D. Bhagatji, S. Kumar, O. G. Kravchenko. **Effects of Biomass and Iron Catalyst on Yield of Plant-Based Graphitic Nanoplatelets.** *Materials Chemistry and Physics*, 131629, 2025.
4. E. Ebrahimi, M. N. Saquib, A. R. Ravangard, et al. **Fatigue Performance of Polyamide Glass Fiber Composites Governed by Plastic Deformation and Weave Meso-Structure.** *American Society for Composites 40th Anniversary*, 2025.
5. D. W. Mulqueen, A. Ravangard, J. D. Bhagatji, S. Kumar, O. G. Kravchenko. **Effects of Biomass and Catalyst Selection on Yield and Properties of Plant-Based Graphene Nanoplatelets.** *Available at SSRN 5334252*.
6. A. Ravangard, O. Kravchenko. **Compaction and Mechanical Performance of AFP Composites with Fiber Tow Gaps: Experimental Investigation and Multiphysics Modeling.** *24th International Conference on Composite Materials (ICCM24)*, 2025.
7. A. Ravangard, O. Kravchenko. **Reducing Out-of-Plane Fiber Waviness in AFP Laminate with Tow Gaps by Selective Placement of Thermoplastic Veils.** *SAMPE Conference*, 2025.
8. A. Ravangard, V. C. Jamora, J. D. Bhagatji, O. Kravchenko. **Mechanics of Resin Rich Regions Formation in AFP Preform with Staggered Fiber Tow Gaps.** *Sixth International Symposium on Automated Composites Manufacturing (ACM6)*, 2024.

9. A. R. Ravangard, V. C. Jamora, J. D. Bhagatji, O. Kravchenko. **Origin and Significance of Non-Uniform Morphology in AFP Composites.** *American Society for Composites (ASC) 38th Annual Technical Conference*, 2023.
10. B. Razmjooei, A. R. Ravangard, L. Momayez, M. Ferchichi. **The Influence of Heat Transfer Due to Radiation from a Combustion Chamber.** *Journal of Thermal Analysis and Calorimetry*, 147(3):1901–1917, 2022.
11. A. R. Ravangard, L. Momayez, M. Rashidi. **Effects of Geometry on Simulation of Two-Phase Flow in Microchannel with Density and Viscosity Contrast.** *Journal of Thermal Analysis and Calorimetry*, 139(1):427–440, 2020.
12. A. R. Ravangard, R. Kamali. **A Numerical Investigation of Kenics Static Mixer as a Heat Exchanger in Separation and Segregation Process of Supercritical Carbon Dioxide.** *Conference on Recent Advances in Aerospace and Associated Sciences*, 2015.

Teaching and Research Experience

Graduate Teaching Assistant — Old Dominion University, Norfolk, VA

Department of Mechanical & Aerospace Engineering	Aug 2025–Present
College of Engineering & Technology	Jan 2025–May 2025
Department of Mechanical & Aerospace Engineering	Aug 2024–Dec 2024
Engineering Management	Dec 2023–May 2024
Department of Mathematics & Statistics	Aug 2023–Dec 2023
Department of Mathematics & Statistics	Dec 2022–May 2023
Department of Mathematics & Statistics	Aug 2022–Dec 2022
Department of Mechanical & Aerospace Engineering	May 2022–Aug 2022

Courses Assisted: Solid Mechanics Lab, Statics, CAE Modeling, C++ Programming, Dynamics and Control, Computational Methods (2023), Gas Dynamics (2023)

Graduate Research Assistant — Old Dominion University, Norfolk, VA

ODU Research Foundation (Supervisor: Dr. O. Kravchenko)	May 2023–Present
Department of Business Graduate Studies	Sep 2022–Jan 2023
Department of Mathematics & Statistics	Jul 2022–Aug 2022
NSF-Funded Research	Dec 2020–May 2022

Honors & Awards

Prabhu Endowed Graduate Scholarship in Mechanical Engineering, Old Dominion University 2024–2025

Recognized for outstanding academic achievement

Professional Memberships and Leadership

American Society for Composites (ASC) , Member	Jan 2024–Present
Society for the Advancement of Material and Process Engineering (SAMPE) , Member	Sep 2024–Present
ODU SAMPE Student Chapter , Secretary	2025–2026 Academic Year