

Mohammad Reza Karamooz-Ravari

Graduate University of Advanced Technology, Faculty of Mechanical and Materials Engineering

ORCID ID: 0000-0002-1372-3326

Email: m.karamooz@kgut.ac.ir

Education

Ph.D., Mechanical Engineering, Applied Mechanics

Isfahan University of Technology, Isfahan. GPA: 18.94/20.

Thesis: Constitutive Modeling of Cellular Shape Memory Alloys Using Microplane Theory 2010-2015

- *Awarded as the outstanding Ph.D. Thesis in Isfahan University of Technology (Under the Supervision of Prof. M. Kadkhodaei).*

M.Sc., Mechanical Engineering, Applied Mechanics

Isfahan University of Technology, Isfahan, Iran. GPA: 18.10/20.

Thesis: Optimum Geometric Design of GEROTOR Pump Tooth Profile 2008-2010

B.S., Mechanical Engineering, Solid Mechanics

Isfahan University of Technology, Isfahan, Iran. GPA: 17.87/20.

Thesis: Stress Analysis in First MULAR Teeth during Surgery 2004-2008

- *Awarded Top 10% Scholarship*
- *5th Rank in the Department*

Appointments

Assistant Professor

Graduate University of Advanced Technology, Kerman

2016-Present

Advisor of the Society of Mechanical and Materials Engineers

Graduate University of Advanced Technology, Kerman

Sep. 2017-Sep. 2018

Editorial Board Member

Isaac Scientific Publishing, New Horizons in Mechanical Engineering Journal

May 2017-Present

Member of Academic Committee (August 23-24)

3rd National Congress and Workshops on Nanoscience and Nanotechnology, Kerman, Iran

Aug. 2017-Aug. 2017

Head of Design and Manufacturing Group

Graduate University of Advanced Technology, Kerman

Dec. 2017- Present

Journal Publications

1. **Karamooz Ravari M.R.**, Forouzan M.R. (2010) Frequency Equations for the in-Plane Vibration of Orthotropic Circular Annular Plate. *Archive of Applied Mechanics* 81 (9):1307-1322.
2. **Karamooz Ravari M.R.** (2011) Elliptical Lobe Shape Gerotor Pump Design to Minimize Wear. *Frontiers of Mechanical Engineering* 6 (4):429-434.

3. **Karamooz Ravari M.R.**, Forouzan M.R., Moosavi H. (2011) Flow Irregularity and Wear Optimization in Epitrochoidal Gerotor Pumps. *Meccanica* 47 (4):917-928.
4. **Karamooz Ravari M.R.**, Shahidi A.R. (2012) Axisymmetric Buckling of the Circular Annular Nanoplates Using Finite Difference Method. *Meccanica* 48 (1):135-144.
5. **Karamooz Ravari M.R.**, Kadkhodaei M. (2014) A Computationally Efficient Modeling Approach for Predicting Mechanical Behavior of Cellular Lattice Structures. *Journal of Materials Engineering and Performance* 24 (1):245-252.
6. **Karamooz Ravari M.R.**, Kadkhodaei M., Badrossamay M., Rezaei R. (2014) Numerical Investigation on Mechanical Properties of Cellular Lattice Structures Fabricated by Fused Deposition Modeling. *International Journal of Mechanical Sciences* 88:154-161.
7. **Karamooz Ravari M.R.**, Talebi S., Shahidi A.R. (2014) Analysis of the Buckling of Rectangular Nanoplates by Use of Finite-Difference Method. *Meccanica* 49 (6):1443-1455.
8. **Karamooz Ravari M.R.**, Kadkhodaei M., Ghaei A. (2015) A Microplane Constitutive Model for Shape Memory Alloys Considering Tension–Compression Asymmetry. *Smart Materials and Structures* 24 (7)
9. **Karamooz Ravari M.R.**, Kadkhodaei M., Ghaei A. (2015) A Unit Cell Model for Simulating the Stress-Strain Response of Porous Shape Memory Alloys. *Journal of Materials Engineering and Performance* 24 (10):4096-4105.
10. **Karamooz Ravari M.R.**, Kadkhodaei M., Ghaei A. (2015) Effects of Asymmetric Material Response on the Mechanical Behavior of Porous Shape Memory Alloys. *Journal of Intelligent Material Systems and Structures* 27 (12):1687-1701.
11. Mehrabi R., **Karamooz Ravari M.R.** (2015) Simulation of Superelastic SMA Helical Springs. *Smart Structures and Systems* 16 (1):183-194.
12. Shahriari B., **Karamooz Ravari M.R.**, Zeighampour H. (2015) Vibration Analysis of Functionally Graded Carbon Nanotube-Reinforced Composite Nanoplates Using Mindlin's Strain Gradient Theory. *Composite Structures* 134:1036-1043.
13. **Karamooz Ravari M.R.**, Esfahani S.N., Andani M.T., Kadkhodaei M., Ghaei A., Karaca H., Elahinia M. (2016) On the Effects of Geometry, Defects, and Material Asymmetry on the Mechanical Response of Shape Memory Alloy Cellular Lattice Structures. *Smart Materials and Structures* 25 (2)
 - *Selected as the front cover page story by "Smart Materials and Structures, Volume 25, Number 2, February 2016"*
14. Naghieh S., **Karamooz Ravari M.R.**, Badrossamay M., Foroozmehr E., Kadkhodaei M. (2016) Numerical Investigation of the Mechanical Properties of the Additive Manufactured Bone Scaffolds Fabricated by Fdm: The Effect of Layer Penetration and Post-Heating. *Journal of the Mechanical Behavior of Biomedical Materials* 59:241-250.
15. Rezaei R., **Karamooz Ravari M.R.**, Badrossamay M., Kadkhodaei M. (2016) Mechanical Characterization and Finite Element Modeling of Polylactic Acid Bcc-Z Cellular Lattice Structures Fabricated by Fused Deposition Modeling. *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science* 231 (11):1995-2004.
16. Shahriari B., **Karamooz Ravari M.R.**, Yousefi S., Tajdari M. (2016) A Heuristic Algorithm Based on Line-up Competition and Generalized Pattern Search for Solving Integer and Mixed Integer Non-Linear Optimization Problems. *Latin American Journal of Solids and Structures* 13 (2):224-242.
17. Taheri Andani M., Haberland C., Walker J.M., **Karamooz M.R.**, Sadi Turabi A., Saedi S., Rahmanian R., Karaca H., Dean D., Kadkhodaei M., Elahinia M. (2016) Achieving Biocompatible Stiffness in NiTi through Additive Manufacturing. *Journal of Intelligent Material Systems and Structures* 27 (19):2661-2671.

18. **Karamooz Ravari M.R.**, Shahriari B., Seyfali E. (2017) Stress and Displacement Analysis of First Molar Hollow Tooth During Dental Filling Operation Using Three-Dimensional Finite Element Method. *International Journal of Advanced Design and Manufacturing Technology* 10 (4):87-92.
19. Shahriari B., Jalali M., **Karamooz Ravari M.R.** (2017) Vibration Analysis of a Rotating Variable Thickness Bladed Disk for Aircraft Gas Turbine Engine Using Generalized Differential Quadrature Method. *Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering* 231 (14):2739-2749.
20. Taheri Andani M., Dehghani R., **Karamooz-Ravari M.R.**, Mirzaeifar R., Ni J. (2017) Spatter Formation in Selective Laser Melting Process Using Multi-Laser Technology. *Materials & Design* 131:460-469.
21. Taheri Andani M., Saedi S., Turabi A.S., **Karamooz M.R.**, Haberland C., Karaca H.E., Elahinia M. (2017) Mechanical and Shape Memory Properties of Porous Ni50.1Ti49.9 Alloys Manufactured by Selective Laser Melting. *Journal of the Mechanical Behavior of Biomedical Materials* 68:224-231.
22. **Karamooz-Ravari M.R.**, Dehghani R. (2018) The Effects of Shape Memory Alloys' Tension-Compression Asymmetry on Niti Endodontic Files' Fatigue Life. *Proceedings of the Institution of Mechanical Engineers Part H: Journal of Engineering in Medicine* 232 (5):437-445.
23. **Karamooz-Ravari M.R.**, Shahriari B. (2018) A Numerical Model Based on Voronoi Tessellation for the Simulation of the Mechanical Response of Porous Shape Memory Alloys. *Meccanica* 53 (13):3383-3397.
24. **Karamooz-Ravari M.R.**, Taheri Andani M., Kadkhodaei M., Saedi S., Karaca H., Elahinia M. (2018) Modeling the Cyclic Shape Memory and Superelasticity of Selective Laser Melting Fabricated Niti. *International Journal of Mechanical Sciences* 138-139:54-61.
25. Naghieh S., **Karamooz-Ravari M.R.**, Sarker M.D., Karki E., Chen X. (2018) Influence of Crosslinking on the Mechanical Behavior of 3d Printed Alginate Scaffolds: Experimental and Numerical Approaches. *Journal of the Mechanical Behavior of Biomedical Materials* 80:111-118.
26. Naghieh S., Sarker M., **Karamooz-Ravari M.R.**, McInnes A., Chen X. (2018) Modeling of the Mechanical Behavior of 3d Bioprinted Scaffolds Considering the Penetration in Interlocked Strands. *Applied Sciences* 8 (9):1422.
27. Taheri Andani M., Dehghani R., **Karamooz-Ravari M.R.**, Mirzaeifar R., Ni J. (2018) A Study on the Effect of Energy Input on Spatter Particles Creation During Selective Laser Melting Process. *Additive Manufacturing* 20:33-43.
28. Taheri Andani M., **Karamooz-Ravari M.R.**, Mirzaeifar R., Ni J. (2018) Micromechanics Modeling of Metallic Alloys 3d Printed by Selective Laser Melting. *Materials & Design* 137:204-213.
 - *Among the top 25 most downloaded papers of the journal in 2018.*
29. Taheri Andani M., Ghodrati M., **Karamooz-Ravari M. R.**, Mirzaeifar R., & Ni, J. (2019) Damage modeling of metallic alloys made by additive manufacturing. *Materials Science and Engineering: A*, 743, 656-664.
30. **Karamooz-Ravari M.R.**, Shahriari B. (2019) Numerical Implementation of the Microplane Constitutive Model for Shape Memory Alloys. *Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications*, 233 (6): 1117-1133
31. Shahriari B., **Karamooz-Ravari M.R.**, Yousefi S., Tajdari M. (2014) Optimum Design of the Second Stage Disk of J85-21-Ge Gas Turbine Engine. *Aerospace propulsion* 1:51-65. (In Persian)
32. Shahriari B., Yousefi S., Tajdari M., **Karamooz-Ravari M.R.** (2015) Optimum Design of the Blist Structure of a Mini-Turbo-Jet Gas Turbine Engine. *Aerospace Knowledge and Technology Journal* 1:83-98. (In Persian)

Conference Proceedings

1. Mashayekhi M., **Karamooz Ravari M.R.**, babaei H. Investigation of Effective Parameters in Milling of Elastomers. In: Proceedings of ICME2010 the 10th Iranian Conference of Manufacturing Engineering, Babol Noshirvani University of Technology, Iran, March 2010. (In Persian)
2. **Karamooz Ravari M.R.**, Kadkhodaei M. Finite Element Modeling of the Elastic Modulus of Ti6Al4V Scaffold Fabricated by SLM. In: Poromechanics V: Proceedings of the fifth BIOT conference on poromechanics, Vienna, Austria, 2013. American Society of Civil Engineers, pp 1021-1028.
 - *Awarded the Conference Scholarship*
3. **Karamooz Ravari M.R.**, Rezaei R., Kadkhodaei M., Badrossamay M. Manufacturability and Mechanical Properties of Lightweight PLA Cellular Lattice Structures Fabricated by FDM. In: International Porous and Powder Materials Symposium and Exhibition (PPM 2013), Cesme-Izmir-Turkey, September 3-6 2013.
4. Shahriari B., **Karamooz-Ravari M.R.**, Yousefi S., Tajdari M. Optimization Program for Gas Turbine Rotor Disks. In: The 1st International and 3rd National Conference of Iranian Aerospace Propulsion Association, Isfahn, Iran, October 22-24 2014. (In Persian)
5. **Karamooz Ravari M.R.**, Nasr Esfahani S., Taheri Andani M., Kadkhodaei M., Elahinia M. Finite Element Modeling of NiTi Cellular Lattice Structures Considering Microstructural Defects. In: Materials Science & Technology 2015 (MS&T15), Columbus, USA, October 2015.
6. Naghieh S., **Karamooz Ravari M.R.**, Badrossamay M., Foroozmehr E., Kadkhodaei M. Finite Element Analysis for Predicting the Mechanical Properties of Bone Scaffolds Fabricated by Fused Deposition Modeling (FDM). In: Modares Mechanical Engineering, Proceedings of the Advanced Machining and Machine Tools Conference, 2015. vol 13. pp 450-454. (In Persian)
7. **Karamooz-Ravari M.R.**, Taheri-Andani M. Prediction of the Elastic Response of TPMS Cellular Lattice Structures Using Finite Element Method. In: Solid Freeform Fabrication (SFF 2017), Austin, Texas, USA, August 7-9 2017.
8. **Karamooz-Ravari M.R.**, Taheri-Andani M. Generation of TPMS Cellular Lattice Structures to Fill an Arbitrary Boundary. In: Solid Freeform Fabrication (SFF 2017), Austin, Texas, USA, August 7-9 2017.
9. Naghieh S., **Karamooz-Ravari M.R.**, Sarker M.D., McInnes A.D., Chen X. Modeling of the Mechanical Behavior of 3d-Bioploted Scaffolds. In: 18th Annual Alberta Biomedical Engineering Conference, Banff Park Lodge, Banff, Alberta, November 10-12 2017.
10. Saqazadeh Z., **Karamooz-Ravari M.R.** Analysis of Free Axial Vibration of Clamped Nanobeams Using Finite Difference Method. In: 3rd National Congress and Workshops on Nanoscience and Nanotechnology, Kerman, Iran, August 23-24 2017. (In Persian)
11. Taheri-Andani M., Dehghani R., **Karamooz-Ravari M.R.**, Mirzaeifar R., Ni J. An Investigation into Spatter Creation During Selective Laser Melting. In: Solid Freeform Fabrication (SFF 2017), Austin, Texas, USA, August 7-9 2017.
 - *Presented in the plenary session of the conference*
12. Zamani H., **Karamooz-Ravari M.R.** Analysis of Free Vibration of Circular Annular Nanoplates Considering Surface Effects. In: 3rd National Congress and Workshops on Nanoscience and Nanotechnology, Kerman, Iran, August 23-24 2017. (In Persian)
13. Zamani H., Dehghani R., and **Karamooz-Ravari M.R.** Investigation of Current Passing through Sma Actuators on the Continuous Robots Response. in 27th Annual International Conference of Iranian Society of Mechanical Engineering. Tehran, Iran, April 30-May 2 2019. (In Persian)

14. Hosein-Zadeh F., Dehghani R., **Karamooz-Ravari M.R.**, and Taheri-Andani M. Investigation of the Number and Size of Spatters During Slm Process Using Image Processing. in 27th Annual International Conference of Iranian Society of Mechanical Engineering. Tehran, Iran, April 30-May 2 2019. (In Persian)
15. Taheri Andani M., Karamooz-Ravari M.R., Ghodrati M., Mirzaeifar R., and Ni J. Development of a Microstructural-Based Computational Model for Predicting the Mechanical Properties of Metals Manufactured by Additive Manufacturing. in 2019 TMS Annual Meeting & Exhibition: Additive Manufacturing and Welding: Physical and Mechanical Metallurgy of Rapidly Solidified Metals. March 2019.

Poster Presentations

1. **Karamooz Ravari M.R.**, Forouzan M.R. (2012) Optimum Geometric Design of Gerotor Pump Tooth Profile. Paper presented at the 1st symposium of Research day, Isfahan University of Technology, Isfahan, Iran, (In Persian)
2. **Karamooz Ravari M.R.**, Kadkhodaei M. (2013) Finite Element Modeling of Mechanical Properties of Porous Materials. Paper presented at the 2st symposium of Research day, Isfahan University of Technology, Isfahan, Iran, (In Persian)
3. **Karamooz Ravari M.R.**, Rezaei R., Kadkhodaei M., Badrossamay M. (2013) Manufacturability and Mechanical Properties of Lightweight PLA Cellular Lattice Structures Fabricated by FDM. Paper presented at the International Porous and Powder Materials Symposium and Exhibition (PPM 2013), Cesme-Izmir-Turkey, September 3-6, 2013.

Patents

1. Forouzan M.R., **Karamooz Ravari M.R.**, Foldable bed for securing people against earthquake, Patent Number: 388080711, Iran, 2009
2. Ebrahimi M., Salehi E., Mirzakouchaki P., Shamuli M.J, Karamooz-Ravari M.R., Fabrication of Porous Dental Post Using Vat-Polymerization, Patent Number: 96655, Iran, 2018

Honors and Awards

1st Rank in Study and Research Matches Ministry of Education. Kerman, Iran	2003
2nd Rank in Table Tennis Matches Ministry of Education. Ravar, Kerman, Iran	2004
4th Rank in the Department Department of Mechanical Engineering, Isfahan University of Technology. Isfahan, Iran	2005
5th Rank in the Department Department of Mechanical Engineering, Isfahan University of Technology. Isfahan, Iran	2006

Licenses and Certifications

Business Skills Bureau of Labor and Social Affairs. Isfahan, Iran.	2008
Stock Market Entrepreneurship Center of Isfahan University of Technology, Isfahan, Iran.	2008

Modeling of Shape Memory Alloys under Multi Axial and Cyclic Loadings (Workshop) Department of Mechanical Engineering, Isfahan University of Technology, Isfahan, Iran.	2013
Improving the quality of research (Workshop) Graduate University of Advanced Technology. Kerman, Iran.	2017
How to write and publish a scientific writing (Workshop) 3 rd National Congress and Workshops on Nanoscience and Nanotechnology, Kerman, Iran.	2017
Movement Therapy The Higher School of Sport. Kerman, Iran.	2018

Projects and Activities

Foundation of Mathematical Association of Young Scholars Ministry of Education, Ravar, Kerman, Iran	2003
Design of a Towing Tank structure for minimizing the vibration of the test samples Aero-Maritime Science & Research Center, Isfahan, Iran	2008
Design and Modeling of cellular dental posts Islamic Azad University of Khorasgan, Isfahan, Iran	2014
Optimization of gas turbine disks Malek-Ashtar University of Technology, Isfahan, Iran	2011
Optimization of gas turbine rotor Malek-Ashtar University of Technology, Isfahan, Iran	2013
Workshop on "Three-dimensional nanobioprinting for tissue regeneration" Presented in 3 rd National Congress and Workshops on Nanoscience and Nanotechnology, Kerman, Iran	Aug. 23, 2017
Workshop on "EndNote Reference Management Software Learning" Graduate University of Advanced Technology, Kerman, Iran	Dec. 2017
Workshop on "EndNote Reference Management Software Learning" Graduate University of Advanced Technology, Kerman, Iran	May 2018
Scientific Speech on "The Applications of SMAs in Biomedical Engineering" Graduate University of Advanced Technology, Kerman, Iran	Dec., 2018
Reviewer of Academic Materials More than 40 Journal and Conference papers One Book One Research Plan	

Teaching

Additive Manufacturing Graduate University of Advanced Technology. Kerman, Iran.	2016-2019
--	-----------

Advanced Mathematics I Graduate University of Advanced Technology. Kerman, Iran.	2016-2018
Advanced Vibration Graduate University of Advanced Technology. Kerman, Iran.	2016-2019
Mechanics of Smart structures Graduate University of Advanced Technology, Kerman, Iran.	2017-2018
Mechanic of Materials Isfahan University of Technology, Isfahan, Iran.	2011
Mechanics of Materials Laboratory Isfahan University of Technology, Isfahan, Iran.	2011
Teacher Assistant: Statics Isfahan University of Technology, Isfahan, Iran.	2008-2011
Teacher Assistant: Dynamics Isfahan University of Technology, Isfahan, Iran.	2009-2013
Teacher Assistant: Machine Design Isfahan University of Technology, Isfahan, Iran.	2012-2014
Teacher Assistant: Advance Mathematics (for PhD students) Isfahan University of Technology. Isfahan, Iran.	2012

Skills

ABAQUS Finite Element Package (Proficient)
Static and Dynamic Analysis, Scripting, Writing User Subroutines

Programming
MATLAB (Proficient), Python (Competent), Fortran (Competent)

Microsoft Office
Word (Proficient), PowerPoint (Proficient), Excel (Competent)

Autodesk Inventor (Proficient)
CAD Modeling, FE Analysis, Dynamic Simulations

ANSYS Finite Element Package (Beginner)
Static and Dynamic Modeling

Adobe Photoshop (Beginner)

MAPLE (Beginner)