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Assistant Professor in Mechanical Engineering, Graduate University of Advanced Technology, Kerman, Iran

**Education:**

***B.S.:***

Mechanical Engineering (Solid Mechanics), Isfahan University of Technology, (2004-2008)

*Dissertation:* Stress analysis in first MULAR teeth during surgery

*Fields of Research:* Finite element, Biomechanics

***M.Sc.:***

Mechanical Engineering (Applied Mechanics), Isfahan University of Technology, (2008-2010)

*Thesis:* Optimum Geometric Design of GEROTOR Pump Tooth Profile

*Fields of Research:* Optimization, Theory of gearing, Numerical methods

***Ph.D.:***

Mechanical Engineering (Applied Mechanics), Isfahan University of Technology, (2010-2015)

*Thesis:* Constitutive Modeling of Cellular Shape Memory Alloys Using Microplane Theory

*Fields of Research:* Shape memory alloys, Nonlinear finite element, Biomechanics, Tissue engineering, Scaffolding, Porous materials, Additive manufacturing, Bone implants, Bone scaffolds, Bioprinting, Constitutive modeling, advanced materials

**Journal papers:**

- 1- Karamooz Ravari M.R., Forouzan M.R., *Frequency equations for the in-plane vibration of orthotropic circular annular plate*, Archive of Applied Mechanics (2011) 81: 1307-1322
- 2- Karamooz Ravari M.R., Forouzan M.R., Moosavi H., *Flow irregularity and wear optimization in epitrochoidal gerotor pumps*, Meccanica (2012) 47: 917-928
- 3- Karamooz Ravari Mohammad Reza, *Elliptical lobe shape Gerotor pump design to minimize wear*, Frontiers of Mechanical Engineering (2011) 6(4): 429-434

- 4- Karamooz Ravari M.R., Shahidi A.R., *Axisymmetric buckling of the circular annular nanoplates using finite difference method*, *Meccanica* (2013) 48: 135-144
- 5- Karamooz Ravari M.R., Talebi S., Shahidi A.R., *Analysis of the buckling of rectangular nanoplates by use of finite-difference method*, *Meccanica* (2014) 49 (6): 1443-1455.
- 6- Karamooz Ravari M.R., Kadkhodaei M., Badrossamay M., Rezaei R., *Numerical investigation on mechanical properties of cellular lattice structures fabricated by fused deposition modeling*, *International Journal of Mechanical Sciences* (2014) 88: 154-161.
- 7- Karamooz Ravari M.R., Kadkhodaei M., *A Computationally Efficient Modeling Approach for Predicting Mechanical Behavior of Cellular Lattice Structures*, *Journal of Materials Engineering and Performance* (2015) 24 (1): 245-252.
- 8- Karamooz Ravari M.R., Kadkhodaei M., Ghaei A., *A microplane constitutive model for shape memory alloys considering tension--compression asymmetry*, *Smart Materials and Structures* (2015) 24: 075016
- 9- Karamooz Ravari M.R., Kadkhodaei M., Ghaei A., *A Unit Cell Model for Simulating The Stress-Strain Response of Porous Shape Memory Alloys*, *Journal of Materials Engineering and Performance* (2015), DOI: 10.1007/s11665-015-1653-4
- 10- Mehrabi R., and Karamooz Ravari M.R., *Simulation of superelastic SMA helical springs*, *Smart Structures and Systems* (2015) 16 (1): 183-194
- 11- Karamooz Ravari M.R., Kadkhodaei M., Ghaei A., *Effects of asymmetric material response on the mechanical behavior of porous shape memory alloys*, *Journal of Intelligent Material Systems and Structures* (2016) 27 (12): 1687-1701
- 12- Shahriari B., Karamooz Ravari M.R., Zeighampour H., *Vibration analysis of functionally graded carbon nanotube-reinforced composite nanoplates using Mindlin's strain gradient theory*, *Composite Structures* (2015) 134: 1036-1043
- 13- Shahriari B., Karamooz Ravari M.R., Yousefi S., and Tajdari M., *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* (2016) 13: 224-242
- 14- Karamooz Ravari M.R., Nasr Esfahani S., Taheri Andani M., Kadkhodaei M., Ghaei A., Karaca H. and Elahinia M., *On the effects of geometry, defects, and material asymmetry on the mechanical response of shape memory alloy cellular lattice structures*, *Smart Materials and Structures* (2016) 25(2): 025008
- 15- Rezaei R., Karamooz Ravari M.R., Badrossamay M., and Kadkhodaei M., *Mechanical Characterization and Finite Element Modeling of POLYLACTIC ACID BCC-Z Cellular Lattice Structures Fabricated by Fused Deposition Modeling*, *Journal of Mechanical Engineering Science* (2016) doi:10.1177/0954406215626941

- 16- Naghieh S., Karamooz Ravari M.R., Badrossamay M., Foroozmehr E., Kadkhodaei M., *Numerical Investigation of the Mechanical Properties of the Additive Manufactured Bone Scaffolds Fabricated by FDM: the Effect of Layer Adhesion and Post-heating*, Journal of Mechanical Behavior of Biomedical Materials (2016) 59: 241-250
- 17- Taheri M., Haberland C., Walker J.M., Karamooz M., Turabi A.S., Saedi S., Rahmanian R., Karaca H., Dean D., Kadkhodaei M., and Elahinia M., *Achieving biocompatible stiffness in NiTi through additive manufacturing*, Journal of Intelligent Material Systems and Structures (2016) 27 (19): 2661-2671
- 18- Shahriari B., Jalali M., Karamooz Ravari M.R., *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 (2017): 0954410016684360
- 19- Andani M.T., Saedi S., Turabi A.S., Karamooz M.R., Haberland C., Karaca H.E., & Elahinia M., *Mechanical and shape memory properties of porous Ni 50.1 Ti 49.9 alloys manufactured by selective laser melting*, Journal of the Mechanical Behavior of Biomedical Materials (2017) 68: 224-231
- 20- Karamooz Ravari M.R., Shahriari B., *Numerical implementation of the microplane constitutive model for shape memory alloys*, Proc IMechE Part L: J Materials: Design and Applications (2017) DOI: 10.1177/1464420717708486
- 21- Andani M.T., Dehghani R., Karamooz-Ravari M. R., Mirzaeifar R., Ni J., *Spatte formation in selective laser melting process using multi-laser technology*. Materials & Design (2017) 131 (5): 460-469
- 22- Andani M.T., Karamooz-Ravari M. R., Mirzaeifar R., Ni J., *Micromechanics modeling of metallic alloys 3D printed by selective laser melting*. Materials & Design (2018) 137: 204-213
- 23- Taheri Andani M., Dehghani R., Karamooz-Ravari M. R., Mirzaeifar R., Ni J., *A study on the effect of energy input on spatter particles creation during selective laser melting process*. Additive Manufacturing (2018) 20: 33-43
- 24- Karamooz Ravari M. R., Shahriari B., Seyfali E., *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 (2017) 10: 87-92
- 25- Karamooz-Ravari M.R., Taheri Andani M, Kadkhodaei M, Saedi S, Karaca H, Elahinia M, *Modeling the cyclic shape memory and superelasticity of selective laser melting fabricated NiTi*, International Journal of Mechanical Sciences (2018) 138-139: 54-61.
- 26- Naghieh S, Karamooz-Ravari MR, Sarker MD, Karki E, Chen X, *Influence of crosslinking on the mechanical behavior of 3D printed alginate scaffolds: Experimental and numerical approaches*, J Mech Behav Biomed Mater (2018) 80: 111-118.

- 27- Karamooz-Ravari M. R., Dehghani R., The effects of shape memory alloys' tension-compression asymmetry on NiTi endodontic files' fatigue life. Proc Inst Mech Eng H (2018). 954411918762020. doi:10.1177/0954411918762020
- 28- Shahriari B., Yousefi S., Tajdari M., Karamooz-Ravari M.R., Optimum design of the blisk structure of a mini-turbo-jet gas turbine engine, Aerospace Knowledge and Technology Journal (2015) 1: 83-98
- 29- Shahriari B., Karamooz-Ravari M.R., Yousefi S., Tajdari M., Optimum design of the second stage disk of J85-21-GE gas turbine engine, Aerospace propulsion (2014) 1:51-65

#### Conference papers:

- 1- Mashayekhi, M., Karamooz, M. R., babaei, H., “*Investigation of effective parameters in milling of elastomers*”, Proceedings of ICME2010 the 10th Iranian Conference of Manufacturing Engineering, March 2010, Babol.
- 2- MR Karamooz Ravari, M Kadkhodaei, “*Finite Element Modeling of the Elastic Modulus of Ti6Al4V Scaffold Fabricated by SLM*”, Poromechanics V: pp. 1021-1028, 2013, Vienna, Austria, doi: 10.1061/9780784412992.122
- 3- Karamooz Ravari M.R., Rezaei R., Kadkhodaei M., and Badrossamay M., *Manufacturability and Mechanical Properties of Lightweight PLA Cellular Lattice Structures Fabricated by FDM*, International Porous and Powder Materials Symposium and Exhibition (PPM 2013), September 3-6, 2013, Cesme-Izmir-Turkey
- 4- Karamooz, M.R., Nasr Esfahani, S., Taheri Andani, M., Kadkhodaei, M., Elahinia, M. “*Finite element modeling of NiTi cellular lattice structures considering microstructural defects*”, Materials Science & Technology 2015 (MS&T15), Columbus, Oct 2015.
- 5- 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)*”, Modares Mechanical Engineering, Proceedings of the Advanced Machining and Machine Tools Conference, Vol. 15, No. 13, pp. 4\_0-4\_4, 2015 (in Persian)
- 6- Shahriari B., Karamooz-ravari M.R., Yousefi S., Tajdari M. “*Optimization Program for Gas Turbine Rotor Disks*”, The 1<sup>st</sup> International and 3<sup>rd</sup> National Conference of Iranian Aerospace Propulsion Association, October 22-24, Isfahan, Iran
- 7- Karamooz-Ravari M.R., Taheri-Andani M., “*Prediction of the elastic response of TPMS cellular lattice structures using finite element method*”, Solid Freeform Fabrication (SFF 2017), August 7-9, 2017, Austin/Texas/USA.
- 8- Karamooz-Ravari M.R., Taheri-Andani M., “*Generation of TPMS cellular lattice structures to fill an arbitrary boundary*”, Solid Freeform Fabrication (SFF 2017), August 7-9, 2017, Austin/Texas/USA.

- 9- Taheri-Andani M., Dehghani R., Karamooz-Ravari M.R., Mirzaeifar R., Ni J., “*An investigation into spatter creation during selective laser melting*”, Solid Freeform Fabrication (SFF 2017), August 7-9, 2017, Austin/Texas/USA.
- 10- Saqazadeh Z., Karamooz-Ravari M.R., “*Analysis of Free Axial Vibration of Clamped Nanobeams Using Finite Difference Method*”, 3<sup>rd</sup> National Congress and Workshops on Nanoscience and Nanotechnology, August 23-24, 2017, Kerman, Iran
- 11- Zamani H., Karamooz-Ravari M.R., “*Analysis of Free vibration of circular annular nanoplates considering surface effects*”, 3<sup>rd</sup> National Congress and Workshops on Nanoscience and Nanotechnology, August 23-24, 2017, Kerman, Iran
- 12- Naghieh S., Karamooz-Ravari M.R., Sarker M.D., McInnes A.D., Chen X., *Modeling of the Mechanical Behavior of 3D-Bioplotted Scaffolds*, 18th Annual Alberta Biomedical Engineering Conference, November 10 – 12, 2017, Banff Park Lodge, Banff, Alberta

#### **Poster Presentations:**

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

#### **Patents:**

- 1- M.R. Forouzan, M.R. Karamooz Ravari, *Foldable bed for securing people against earthquake*, Iran, 2009

#### **Research Activities:**

- 1- Design of a Towing Tank structure for minimizing the vibration of the test samples, Aero-Maritime Science & Research Center, 2008
- 2- Optimization of I-shape beams to maximize portable load and minimize its weight, Department of Mechanical Engineering, Isfahan University of Technology, Iran, 2009
- 3- Foundation of Mathematical Association of Young Scholars, RAVAR-KERMAN, 2003.
- 4- Design and Modeling of cellular dental posts, Isfahan, Islamic Azad University of Khorasgan, 2014.
- 5- Optimization of gas turbine disks, 2011

- 6- Optimization of gas turbine rotor, 2013
- 7- Design and fabrication of NiTi cellular bone scaffolds using indirect AM, from 2014 until now.

**Honors and Awards:**

- 1- 4<sup>th</sup> rank in the department, Department of Mechanical Engineering, Isfahan University of Technology, Iran, 2005
- 2- 5<sup>th</sup> rank in the department, Department of Mechanical Engineering, Isfahan University of Technology, Iran, 2006
- 3- 5<sup>th</sup> rank in the department, Department of Mechanical Engineering, Isfahan University of Technology, Iran, 2008
- 4- 1<sup>st</sup> rank in “Study and Research Matches”, Kerman, Iran 2003
- 5- 2<sup>nd</sup> rank in Ping-Pong Matches, Ravar, Kerman, Iran 2004
- 6- The best PhD thesis, Isfahan University of Technology, 2015
- 7- Awarding a conference scholarship for BIOT-5 in poromechanics, 2013, Vienna, Austria
- 8- An image of the paper entitled “*On the effects of geometry, defects, and material asymmetry on the mechanical response of shape memory alloy cellular lattice structures*” was chosen for the cover of the February 2016 issue of Smart Materials and Structures.
- 9- The conference paper entitled “Spatter formation in selective laser melting process using multi-laser technology” was selected to be presented in plenary session of Solid Freeform Fabrication 2017 conference.

**Certificates:**

- 1- Business’s Skills, Bureau of Labor and Social Affairs, Iran, 2008
- 2- Exchange market, Isfahan University of Technology, Iran, 2008
- 3- Attending the workshop entitled: Modeling of Shape Memory Alloys under Multi Axial and Cyclic Loadings, Department of Mechanical Engineering, Isfahan University of Technology, 2013
- 4- Attending the workshop entitled: Improving the quality of research, Graduate University of Advanced Technology, 2017
- 5- Attending the workshop entitled: How to write and publish a scientific writing, 3rd National Congress and Workshops on Nanoscience and Nanotechnology, August 24, 2017, Kerman, Iran
- 6- Presenting a workshop entitled: Three-dimensional nano-bioprinting for tissue regeneration, 3rd National Congress and Workshops on Nanoscience and Nanotechnology, August 23, 2017, Kerman, Iran

- 7- A member of Academic Committee in 3rd National Congress and Workshops on Nanoscience and Nanotechnology, August 23-24, 2017, Kerman, Iran

**Teaching:**

- 1- Mechanic of Materials, Department of Mechanical Engineering, Isfahan University of Technology, 2011
- 2- Mechanics of Materials Laboratory, Department of Mechanical Engineering, Isfahan University of Technology, IRAN
- 3- Teacher Assistant of STATICS, Department of Mechanical Engineering, Isfahan University of Technology, IRAN, 2008-2011
- 4- Teacher Assistant of Dynamics, Department of Mechanical Engineering, Isfahan University of Technology, IRAN, 2009-2013
- 5- Teacher Assistant of Machine Design, Department of Mechanical Engineering, Isfahan University of Technology, IRAN, 2012
- 6- Teacher Assistant of Advance Mathematics for PhD students, Department of Mechanical Engineering, Isfahan University of Technology, IRAN, 2012
- 7- Teacher Assistant of Machine Design, Department of Mechanical Engineering, Isfahan University of Technology, IRAN, 2014
- 8- Advance Mathematics I, Department of Mechanical Engineering, Graduate University of Advanced Technology, IRAN, 2016, 2017
- 9- Additive manufacturing technologies, Department of Mechanical Engineering, Graduate University of Advanced Technology, IRAN, 2016, 2018
- 10- Advanced Vibration, Department of Mechanical Engineering, Graduate University of Advanced Technology, IRAN, 2017, 2018
- 11- Mechanics of Smart structures, Department of Mechanical Engineering, Graduate University of Advanced Technology, IRAN, 2017

**Review of Journal papers:**

- 1- Journal of Nanoparticle Research: 1 paper
- 2- Materials and Design: 5 papers
- 3- Shape Memory and Superelasticity: 1 paper
- 4- Part C: Journal of Mechanical Engineering Science: 4 papers
- 5- Iranian Journal of Science and Technology, Transactions of Mechanical Engineering: 1 paper

- 6- International Journal of Mechanical Sciences: 3 paper
- 7- Aerospace Knowledge and Technology Journal: 5 papers
- 8- Journal of Human and Environment: 1 paper
- 9- The 16<sup>th</sup> international conference of Iranian Aerospace Society: 2 papers
- 10- 3rd National Congress and Workshops on Nanoscience and Nanotechnology: 8 papers

**Editorial Board Member of international journals:**

- 1- “New Horizons in Mechanical Engineering”, Isaac Scientific Publishing

**Review of Books:**

- 1- Static and Dynamic Problems of Nano Beams and Plates, World Scientific publications

**Software Skills:**

ABAQUS (Expert)

ANSYS (Beginner)

MATLAB (Expert)

SAM (Beginner)

Adobe Photoshop CS2 (Beginner)

MAPLE (Expert)

MICROSOFT MATH (Expert)

AUTODESK INVENTOR (Expert)

MICROSOFT OFFICE (Expert)

**Programming Abilities:**

MATLAB (Expert), FORTRAN (Expert), Python (Expert), Scripting for ABAQUS (Expert), Writing subroutine for ABAQUS (Expert)