

Dr. Mohammad Reza Karafi

Birth date

22/09/1984



CONTACT

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Electro-physical Technologies
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LANGUAGES

Persian – C2

English – C1

WORK EXPERIENCE

2013 -Present

Associate Professor of Mechanical Engineering
Department, Tarbiat Modares university, Tehran, Iran.

My research area of interests:

- Mechatronics
- Sensors and actuators composed of smart materials
- Ultrasonic technology (acoustic devises and ultrasonic power supplies)
- bio mechatronics

My teaching courses:

- Mechatronics 1 & 2
- Control
- Smart materials and structures
- Advanced engineering mathematics

2014 – 2020

Executive manager of ALFA Co.

- production of ultrasonic, and plasma power supplies and piezoelectric ultrasonic transducers.
- Address of the web site: www.alfapower.ir

EDUCATION

2002 - 2006

BSc, Mechanical engineering, Iran University of Science and Technology, Tehran, Iran. GPA 17.35 (1st Rank graduate)

Thesis title: Design and manufacture of continues welding robot (with capability of the control of the arc length and TIG welding of unflat work pieces)

2006 - 2008

MSc, Mechanical Engineering, Tarbiat Modares University, Tehran, Iran. GPA 18.32 (1st Rank graduate)

PROFILE LINK

Google Scholar Profile Link:

https://scholar.google.com/citations?user=Stj_LFAVkawC&hl=en

ResearchGate Profile Link:

<https://www.researchgate.net/profile/Mohammad-Karafi>

LinkedIn Profile Link:

<https://www.linkedin.com/in/mohammad-reza-karafi-0b0a4454/>

Scopus Author ID:

24923463100

ORCID:

0000-0002-2459-7169

Thesis title: Design and Fabrication of novel ultrasonic motor with roller interface

2008 - 2013

Ph.D, Mechanical Engineering, Tarbiat Modares

University, Tehran, Iran. GPA 18.26 (1st Rank graduate)

PhD dissertation: Design, fabrication and characteristic investigation of a novel torsional magnetostrictive transducer

2012-2013

PhD student Sabbatical, Mechanical Engineering Department, University of British Columbia (UBC) Vancouver, Canada.

Publications

JOURNAL PAPERS

2023	Development of a contact layer in the finite element model of ultrasonic transducers to evaluate losses in contact surfaces M Sharifi, M Karafi Applied Acoustics 211, 109455
2023	An analytical model to study the frequency response of ultrasonic welding transducers A Yazdian, MR Karafi SN Applied Sciences 5 (6), 157
2023	Numerical Simulation of the saline water electrolysis process using electromagnetic waves A Eghbali, MR Karafi, MH Sadeghi
2022	An investigation on the material removal mechanism, surface porosity, and surface integrity in ultrasonic vibration assisted turning of porous stainless steel 316L B Ghorbani, MJ Nategh, MR Karafi Proceedings of the Institution of Mechanical Engineers

	Part B: Journal of ...
2022	Theoretical Study of Effective Parameters in the Friction Reduction by Ultrasonic Vibrations in Solid Surfaces A Fattahi Avati, MR Karafi Iranian Journal of Mechanical Engineering Transactions of the ISME 23 (2 ...
2022	An analytical approach to design horns and boosters of ultrasonic welding machines A Yazdian, MR Karafi SN Applied Sciences 4 (6), 166
2022	Design and fabrication of six axis force/torque sensor using strain gauges MR Taherzadehghahfarokh, MR Karafi Iranian Journal of Manufacturing Engineering 9 (3), 1-10
2022	Development of a novel pneumatic positioning actuator equipped with new continuous air impulse generators S Ghorbanirezaei, Y Hojjat, S Dehdari, MR Karafi Mechanics Based Design of Structures and Machines, 1-14
2022	Theoretical Study of Effective Parameters in the Friction Reduction by Ultrasonic Vibrations in Solid Surfaces AF Avati, MR Karafi
2021	An electromagnetic arrayed pump to create arbitrary velocity profiles in fluid SP Hashemi, MR Karafi, MH Sadeghi, VR Esfedan SN Applied Sciences 3, 1-13
2021	A New Method to Detect and Track the Resonance Frequency of Piezoelectric Transducers in Ultrasonic Power Supplies

	E Taghvayi, MR Karafi International Journal of Industrial Electronics Control and Optimization 4 ...
2021	A continuum electro-mechanical model of ultrasonic Langevin transducers to study its frequency response M Karafi, S Kamali Applied Mathematical Modelling 92, 44-62
2020	An introduction to a bulk magnetostrictive bending actuator using a permendur rod MR Karafi, RS Nejabat SN Applied Sciences 2, 1-10
2019	Effects of Dielectric Film Viscoelasticity on Dynamic Behavior of Dielectric Elastomer Minimum Energy Structure H Vatanjou, Y Hojjat, MR Karafi Modares Mechanical Engineering 19 (11), 2589-2597
2019	Nonlinear dynamic analysis of dielectric elastomer minimum energy structures H Vatanjou, Y Hojjat, M Karafi Applied Physics A 125, 1-11
2019	Design and fabrication of a novel vibration-assisted drilling tool using a torsional magnetostrictive transducer MR Karafi, S Korivand The International Journal of Advanced Manufacturing Technology 102, 2095-2106
2019	Evaluation of mechanical and electric power losses in a typical piezoelectric ultrasonic transducer MR Karafi, F Khorasani Sensors and Actuators A: Physical 288, 156-164

2019	An analytical approach to design of ultrasonic transducers considering lateral vibrations MR Karafi, SA Mirshabani Journal of Stress Analysis 3 (2), 47-58
2018	Development of a hybrid DEP-SAW device for trapping/sensing target cells R Ghayour, Y Hojjat, MR Karafi, H Sadeghiyan Applied Acoustics 141, 355-361
2018	Introduction of a hybrid sensor to measure the torque and axial force using a magnetostrictive hollow rod MR Karafi, SJ Ehteshami Sensors and Actuators A: Physical 276, 91-102
2017	Reduction of magneto rheological dampers stiffness by incorporating of an eddy current damper AA Maddah, Y Hojjat, MR Karafi, MR Ashory Journal of Sound and Vibration 396, 51-68
2016	An approach to design and fabrication of resonant giant magnetostrictive transducer MR Sheykholeslami, Y Hojjat, S Cinquemani, M Ghodsi, M Karafi Smart Structures and Systems 17 (2), 313-325
2016	Numerical study of the geometric parameters effect on acoustic pressure of focal point of a linear phased array ultrasonic transducer Y HOJJAT, S Ansari, MR Karafi IRANIAN JOURNAL OF MANUFACTURING ENGINEERING 3 (1), 33-40
2015	A combined Preisach–Hyperbolic Tangent model for magnetic hysteresis of Terfenol-D S Talebian, Y Hojjat, M Ghodsi, MR Karafi, S Mirzamohammadi

	Journal of Magnetism and Magnetic Materials 396, 38-47
2015	Study on classical and excess eddy currents losses of Terfenol-D S Talebian, Y Hojjat, M Ghodsi, MR Karafi Journal of Magnetism and Magnetic Materials 388, 150-159
2015	Development of magnetostrictive resonant torsional vibrator MR Karafi, M Ghodsi, Y Hojjat IEEE Transactions on Magnetics 51 (9), 1-8
2015	An in vitro study of thermal necrosis in ultrasonic-assisted drilling of bone E Shakouri, MH Sadeghi, MR Karafi, M Maerefat, M Farzin Proceedings of the Institution of Mechanical Engineers, Part H: Journal of ...
2014	Experimental and analytical investigation of thrust force in ultrasonic assisted drilling of bone E Shakouri, MH Sadeghi, M Maerefat, MR Karafi, M Memarpour Modares Mechanical Engineering 14 (6), 194-200
2014	Effect of rotatory-vibrational bone drilling in lowering thermal necrosis E Shakouri, MH Sadeghi, M Karafi, M Farzin Iranian Journal of Orthopaedic Surgery 12 (2), 53-59
2014	Study on the magnetic hysteresis of terfenol-D using new hybrid model S Talebian, Y Hojjat, M Ghodsi, MR Karafi Key Engineering Materials 605, 519-522
2013	A novel magnetostrictive torsional resonant transducer

	MR Karafi, Y Hojjat, F Sassani, M Ghodsi Sensors and Actuators A: Physical 195, 71-78
2013	A new hybrid longitudinal–torsional magnetostrictive ultrasonic transducer MR Karafi, Y Hojjat, F Sassani Smart materials and structures 22 (6), 065013
2013	DESIGN, FABRICATION AND CHARACTERIZATION TORSIONAL MAGNETOSTRICTIVE TRANSDUCER MR KARAFI, Y HOJJAT, F SASSANI, M GHODSI MODARES MECHANICAL ENGINEERING 13 (3), 128-145
2011	Efficiency Investigation of a Self-Sensing Giant Magnetostrictive Actuator S Talebian, Y Hojjat, M Ghodsi, MR Karafi, MR Sheykholeslami, ...
2011	Development of an inductive encoder for simultaneous measurement of two-dimensional displacement Y Hojjat, MR Karafi, M Ghanbari, M Lotfi International Journal of Advanced Manufacturing Technology 53 (5), 681
2010	Study on automatic control of arc gap in robotic TIG welding MR Karafi, R Narimani, Y Hojjat, M Gheybi The International Journal of Advanced Manufacturing Technology 50, 953-960
2010	Introduction of roller interface ultrasonic motor (RIUSM) Y Hojjat, MR Karafi Sensors and Actuators A: Physical 163 (1), 304-310

2009	A novel ultrasonic motor with roller interface (RUSM) Y Hojjat, MR Karafi, MD Tehrani 2009 IEEE/ASME International Conference on Advanced Intelligent Mechatronics ...
2008	Design and Manufacturing of a Mechanical Device for Dimensional Control of the Airfoil of Turbine Blades M Sababi, H Foroghi, M Karafi Modares Mechanical Engineering 8 (1), 1-12
2008	Two dimensional inductive encoder for measuring 2D displacement MR Karafi, M Ghanbari 2008 IEEE/ASME International Conference on Advanced Intelligent Mechatronics ...
2008	DESIGN AND MANUFACTURING OF A MECHANICAL DEVICE FOR DIMENSIONAL CONTROL OF THE AIRFOIL OF TURBINE BLADES Y HOJAT, M SABABI, H FOROUGH, MR KARAFI MODARES TECHNICAL AND ENGINEERING
2008	Two dimensional inductive encoder for measuring 2D displacement Y Hojjat, MR Karafi, M Ghanbari 2008 IEEE/ASME International Conference on Advanced Intelligent Mechatronics

SOFTWARE SKILLS

- MATLAB
- CATIA
- ANSYS
- COMSOL
- LAB VIEW
- C Programming language
- IAR

- Keil

TECHNICAL SKILLS AND EXPERTISE

- Ultrasonic applications (ultrasonic welding, cleaning, ...)
- Smart material applications
- Design and manufacture of power supply (DC to DC, DC to AC, AC to AC, Analogue, switching)
- Micro controller programming
- Design and implementation of analogue and digital electronic circuits
- Theoretical and experimental study of electro-mechanical systems

REFERENCES

Prof. Eng. Yousef Hojjat

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