Masih Banijamali

Researcher in Tribology and Contact Mechanics

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Education

M.Sc. in Mechanical Engineering - Applied Mechanics *Sep. 2016 – Sep. 2019*
K. N. Toosi University of Technology (KNTU) *Tehran, Iran*

Master of Business Administration (MBA) *May. 2018 – May. 2019*
K. N. Toosi University of Technology (KNTU) *Tehran, Iran*

B.Sc. in Mechanical Engineering - Solid Mechanics *Sep. 2010 – Aug. 2015*
Islamic Azad University - Science and Research Branch *Tehran, Iran*

Research Interest

- Tribology
- Friction and Wear
- Solid Mechanics
- Material Characterization
- Metal Matrix Composite (MMC)
- Lightweight Alloys

Research Experience

Graduate Research Assistant *Apr 2021 – Present*
AMAs Research Group, Materials and Energy Research Center (MERC) *Alborz, Iran*

- Design and develop novel light alloys and composites with enhanced mechanical and tribological properties
- Oversee lab operations, procurement of materials and equipment, data management, and budget planning
- Authored 4 peer-reviewed journal articles, and contributed to research proposals for securing funding

R&D Engineer *Jun 2021 – Aug 2022*
Engineering Department, MAPNA Locomotive Co. (MLC) *Alborz, Iran*

- Contributed to design and construction of an industrial positioner for precise welding of railway bogie pins
- Collaborated with cross-functional teams on reverse engineering of MP610 diesel engine components

Visiting Research Collaborator *Jul 2019 – Aug 2020*
Materials and Energy Research Center (MERC) *Alborz, Iran*

- Joined AMAs Research Group to expand ongoing research on magnesium alloys with tribological studies
- Acquired hands-on experience in materials processing, testing tools, and advanced characterization techniques
- Presented research findings at iMat2019 conference and internal lab meetings

Research Assistant *Oct 2017 – Aug 2020*
Faculty of Mechanical Engineering, K. N. Toosi University of Technology (KNTU) *Tehran, Iran*

- Developed a unified MATLAB code for accurate vibration analysis of various composite shell geometries
- Applied theoretical and numerical methods to address complex vibration issues in lattice-stiffened rotating shells
- Authored and published 2 peer-reviewed journal articles

Academic Service

Peer Mentor

Mentored 3 graduate students (two at MERC, one at KNTU) on their Master's theses

- Provided support in research methodology, academic writing, and adhering to high scientific standards

Peer Reviewer

Conducted over 25 verified reviews of scholarly manuscripts for prestigious journals, including:

- Wear
- Applied Mathematical Modelling
- Applied Surface Science Adv.
- Physica Scripta
- Materials Research Express
- Engineering Research Express

Publications

Peer-reviewed Journal Articles

- **S.M. Banijamali**, S. Najafi, A. Sheikhani, Y. Palizdar, "Dry tribological behavior of hot-rolled WE43 magnesium matrix composites reinforced by B4C particles." *Wear*, vol. 508 (2022): 204487. doi: 10.1016/j.wear.2022.204487
- **S.M. Banijamali**, Y. Palizdar, S. Najafi, A. Sheikhani, M. Soltan Ali Nezhad, P. Valizadeh Moghaddam, H. Torkamani. "Effect of Ce addition on the tribological behavior of ZK60 Mg-alloy." *Metals and Materials International*, vol. 27 (2021): 2732-2742. doi: 10.1007/s12540-020-00832-4
- **S.M. Banijamali**, A.A. Jafari, "Vibration analysis and critical speeds of a rotating functionally graded conical shell stiffened with Anisogrid lattice structure based on FSDT." *Thin-Walled Structures*, vol. 188 (2023): 110841. doi: 10.1016/j.tws.2023.110841
- **S.M. Banijamali**, Y. Palizdar, K.A. Nekouee, S. Najafi, M. Shariat Razavi. "Effect of B4C reinforcement and hot rolling on microstructure and mechanical properties of WE43 magnesium matrix composite." *Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications*, vol. 236, no. 9 (2022): 1854-1868. doi: 10.1177/14644207221085939
- **S.M. Banijamali**, M. Shariat Razavi, Y. Palizdar, S. Najafi, A. Sheikhani, H. Torkamani. "Experimental and simulation study on wear behavior of ZK60 alloy with 3 wt.% Yttrium addition." *Journal of Materials Engineering and Performance*, vol. 31, no. 6 (2022): 4721-4734. doi: 10.1007/s11665-022-06585-y
- S. Najafi, Y. Palizdar, A. Sheikhani, M. Soltan Ali Nezhad, F. Abdiyan, **S.M. Banijamali**, H. Torkamani. "The effect of Y addition on the microstructure and work hardening behavior of Mg-Zn-Zr alloys." *Journal of Materials Engineering and Performance*, vol. 30 (2021): 2574-2585. doi: 10.1007/s11665-021-05592-9
- **S.M. Banijamali**, A.A. Jafari, "Free vibration analysis of rotating functionally graded conical shells reinforced by anisogrid lattice structure." *Mechanics Based Design of Structures and Machines*, vol. 51, no. 4 (2023): 1881-1903. doi: 10.1080/15397734.2021.1881539

Manuscripts In Progress

- M. Ahmadi Nouri, **S.M. Banijamali**, S. Najafi, H. Saghafian, Y. Palizdar, "Effects of Ag addition on the microstructure, mechanical properties and tribological behavior of Mg-Gd-Zn alloy." Submitted to*Journal of Alloys and Compounds* (Under review)
- **S.M. Banijamali**, S. Najafi, "Bimodal-Sized Reinforcements in Metal Matrix Composites: A Review of Processing, Mechanical, and Wear Properties." (In preparation)

Teaching Experience

Workshop Instructor

Materials and Energy Research Center (MERC) *Fall 2022 – Spring 2024*

- Designed and taught the "*Writing & Publishing a Research Paper*" co-curricular workshop
- Designed and co-taught the "*Learn Academic Referencing with EndNote/Mendeley*" co-curricular workshop

K. N. Toosi University of Technology (KNTU) *Spring 2020, Summer 2020*

- Designed and taught the "*Modeling FGMs in Abaqus*" co-curricular workshop

Teaching Assistant (TA), Advanced Mathematics

K. N. Toosi University of Technology (KNTU) *Fall 2017, Spring 2018*

- Conducted weekly recitations for over 30 students; designed and graded assignments and quizzes, and offered additional support during office hours

Skills

Materials Analysis : Mechanical Testing, Tribo-system Analysis, Metallographic Sample Preparation, Optical Microscopy, SEM, EDS, XRD, FTIR, AFM, Profilometry

Software & Programming Tools : MATLAB, Abaqus, Fortran (user subroutine in Abaqus), Python, SolidWorks

General Software : Adobe Photoshop, Adobe Illustrator, Inkscape, OriginLab, Microsoft Office, LaTeX

Language : English (Proficient), Persian (Native speaker)

Honors & Awards

- Offered direct admission to the PhD program in Mechanical Engineering at KNTU, based on academic merit
- Awarded full scholarship for the Master's program in Mechanical Engineering at KNTU
- Recognized as an Outstanding Alumnus in Contact Mechanics and Elements of Tribology course at MINES Paris-PSL
- Ranked in top 3% among 10,000 participants in University Entrance Exam for MSc. degree in Mechanical Engineering
- Achieved Trusted Reviewer status with the Institute of Physics (IOP) Publishing

✔ References, Further information, and Proofs are available upon request.