

Mohammad Reza Hajiha

Curriculum Vitae

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[LinkedIn](#) | [ResearchGate](#)

Education

- **Master of Science in Materials and Metallurgical Engineering**, Sep 2018 - Mar 2021
Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
GPA: 17.94/20 (3.7/4.0)
Thesis Topic: The Simulation of Variations in Heat Transfer and Material Flow During Friction-Stir Welding of AA6061 and AA5052 Aluminum Alloys
Thesis Grade: 19.50/20
Supervisor: Dr. Ali Farzadi (Amirkabir University of Technology), Dr. Mohammad Saeedi (Dalhousie University)
- **Bachelor of Science in Materials and Metallurgical Engineering (Industrial Metallurgy)**, Sep 2014 - Aug 2018
Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
GPA: 16.3/20(3.3/4)
Thesis Topic: Recovery of Nickel, Cobalt, and Zinc from Zinc Plant Residue by Chemical Precipitation Method
Thesis Grade: 19.00/20
Supervisor: Dr. Milad Rezaee (Amirkabir University of Technology)

Research Interests

- Additive Manufacturing (3D Printing)
- Alloy Chemistry and Phase Transformations
- Welding and Joining Technologies
- Mechanical Behaviours of Materials
- Materials Characterization
- Recyclable and Sustainable Materials
- Materials Modelling and Simulation
- AI and Machine Learning in Materials Science

Publications

Journal and Conference Papers

- **Hajiha M**, Farzadi A, et al., "Microstructural and Mechanical Properties of Dissimilar Joining of AA5052 and AA6061 by Friction Stir Welding", J Welding Science and Technology, 2024, Doi: [10.47176/JWSTI.2024.04](https://doi.org/10.47176/JWSTI.2024.04)
- **Hajiha M**, Farzadi A, et al., "Optimization of Friction Stir Welding Parameters for Dissimilar Joining 5xxx and 6xxx Series Aluminum Alloys", 5th International Symposium on Characterization, 2025, [Submitted](#)
- **Hajiha M**, Farzadi A, et al., "Solidification Microstructure, Post-Braze Heat Treatment, and Stress Rupture of Wide Gap Brazed Inconel 738", J Welding in the World, 2025, [Under Review](#)

- **Hajiha M**, Farzadi A, “Effect of Alloy Position and Process Conditions on Defect Formation in Dissimilar FSW: A CFD-Based Study”, [Under Review](#)
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Language Proficiency

- **IELTS Academic:** 7.5 / 9 (Reading: 8, Listening: 7.5, Speaking: 7, Writing: 6.5)
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Academic Projects

- *The simulation of variations in heat transfer and material flow during friction-stir welding of AA6061 and AA5052 aluminum alloys*, Mar 2021
 - *Development of Al_2O_3 -Cr Functionally Graded Materials Using Powder Metallurgy*, Dec 2020
 - *Investigation of the Effect of Welding Parameters and Thickness on the Occurrence of Cold Cracking in Welding of A517 Gr. B Steel*, Sep 2020
 - *Magnetic Resonance Imaging: From Basics to Advanced Analysis*, a research project for the Advanced Methods of Materials Analysis course, Jan 2019
 - *Finite Element Simulation of Heat Transfer in TIG Welding of Aluminium Alloys*, a research project for Computer-Aided Design & Joining Methods course, Jan 2019
 - *Recovery of Nickel, Cobalt, and Zinc from Zinc Plant Residue by Chemical Precipitation Method*, Aug 2018
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Presentations

- “Plate-Fin heat exchangers Workshop: The Role of Brazing”, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, Dec 2024
 - “Simulation of Lattice Structures Using nTopology: Optimizing Additively Manufactured Heat Exchangers”, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, Sep 2024
 - “Hilavis Arina, 1st Iranian Manufacturer of Plate-Fin Heat Exchanger”, Ministry of Industry, Mine and Trade, Tehran, Iran, Dec 2023
 - “Host of the 2nd International Metallography and Microscopic Image Contest”, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, Sep 2017- May 2018
 - “Host of The Opening Convocation Ceremony”, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, Sep 2016
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Work Experience

- **R&D Expert**, 2021 – Present (Full Time)
Hilavis Arina, Tehran/Markazi, Iran
 - *Design and develop precision tools and dies for fabricating **plate-fin heat exchangers** components such as fins, sidebars, etc., using advanced computer-aided design (CAD) software and manufacturing techniques.*

- Conduct test runs on manufactured components to ensure they meet dimensional and functional specifications, and implement design adjustments to optimize performance, reliability, and manufacturability of the final heat exchanger units.
 - **Laboratory Supervisor**, 2021 – Present (Full Time)
Hilavis Arina, Tehran/Markazi, Iran
 - Conduct metallographic **sample preparation**, operate standard metallographic testing equipment (stereoscope, optical microscope), and interpret results.
 - Collaborate with external labs for advanced testing (e.g., SEM, quantometry, mechanical tests)
 - **Welding Lab Instructor**, 2018 – 2021 (Part-Time)
Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
 - Assessed and graded **students' classwork, assignments, and projects**, ensuring accurate feedback to support their learning.
 - Provided hands-on **instruction and guidance** in the welding lab, emphasizing safety protocols, technical skills, and adherence to industry standards.
 - **Research Assistant- Powder Metallurgy Lab**, 2020 – 2021 (Part-Time)
Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran
 - Contributed to the development of a **functionally graded alloy** using powder metallurgy, combining Al_2O_3 and Cr powders to achieve a gradual change in material properties along the sample.
 - Assisted in **powder preparation, compaction, and sintering**, and supported microstructural and mechanical evaluations.
 - **Teacher and Educational Consultant**, 2017 – 2019 (Part-Time)
Kanoon Farhangi Amoozesh (Ghalamchi), Tehran, Iran
 - Provided **expert guidance** to students and parents on academic planning.
 - Designed customized educational plans and supported applications to schools and programs.
 - **Materials and Metallurgical Engineering Intern**, Summer 2016 (Part-Time)
Railways of the Islamic Republic of Iran, Tehran, Iran
 - Assisted in the **inspection and failure analysis** of rail components, including fracture surfaces and wear patterns.
 - Contributed to **quality control assessments** of welding, joining, and machining processes used in maintenance and repair operations
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Workshops and Webinars

- 50-hour workshop on “Shielded Metal Arc Welding (SMAW)”, Iran Technical & Vocational Training Organization, Aug 2021
 - 25-hour workshop on “Ansys Fluent Simulation Program”, Amirkabir University of Technology (Tehran Polytechnic), Aug 2020
 - 100-hour workshop on “Visual Testing (VT) | Non-Destructive Material Testing”, Iran Technical & Vocational Training Organization, Jun 2018
 - 50-hour workshop on “Dye Penetrant Testing (PT) | Non-Destructive Material Testing”, Iran Technical & Vocational Training Organization, Aug 2018
 - 100-hour workshop on “Magnetic-Particle Testing (MT) | Non-Destructive Material Testing”, Iran Technical & Vocational Training Organization, Aug 2018
 - 8-hour workshop on “Key to Steel”, Amirkabir University of Technology (Tehran Polytechnic), Aug 2016
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Selected Courses

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| • <i>Advanced Solidification</i> | 19.3/20 | • <i>Advanced Welding Metallurgy</i> | 20/20 |
| • <i>Advanced Welding</i> | 20/20 | • <i>Simulation in Materials Engineering</i> | 18.6/20 |
| • <i>Advanced Methods of Materials Analysis</i> | 19/20 | • <i>Design of Welded Joints</i> | 18.25/20 |
| • <i>Computer-Aided Design & Joining Methods</i> | 17.25/20 | • <i>Corrosion & Oxidation</i> | 20/20 |
| | | • <i>Powder Metallurgy</i> | 16.5/20 |
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Honors & Awards

- **Secured 2nd place** in the class ranking among 16 students upon completion of the M.Sc. program in March 2021
 - **Secured 3rd place** in class ranking among 63 students upon completion of the B.Sc. program, Sep 2018
 - **Granted admission** from the Talented Student Office of Amirkabir University of Technology to study "Materials and Metallurgical Engineering" field at the graduate level without the entrance exam, Sep 2018
 - Achieved a top ranking of 1,600th out of 300,000 participants in a highly competitive national examination, Jun 2014
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Memberships and Extracurricular Involvement

- Member of the Scientific Association of the Materials and Metallurgical Engineering Department, Tehran, Iran, Apr 2017 – Apr 2018
 - Executive Secretary of the 2nd International Metallography and Microscopic Image Contest, Tehran, Iran, Sep 2017-May 2018
 - Core Member of the National Assembly of Scientific Student Associations, Tehran, Iran, Apr 2018 – Apr 2019
 - Assistant Director for the Student Theatre Production "**Fools**" by Neil Simon, March 2019
 - Member of the Editorial Board of **Kaveh** Journal of Scientific Research, Tehran, Iran, Sep 2019 – Sep 2020
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Skills

Simulation Software

- Ansys Fluent | Ansys Mechanical APDL | COMSOL Multiphysics | nTopology

Programming

- C (Expert) | Python | Fortran | Matlab

Technical

- Material Characterization | Mechanical Testing | Metallography | Machining Technologies (Expert) | Welding and Brazing of Aluminum and Nickel-based Alloys | Additive Manufacturing

Technical Software

- X-pert | Key to Steel | Image J | ToupView

A p p l i c a t i o n S o f t w a r e

- | Word, Excel, PowerPoint

C A D a n d D e s i g n

- AutoCAD | SOLIDWORKS | Ansys SpaceClaim | Adobe Photoshop | Microsoft Office

S o f t

- Academic Writing and Searching | Team Leading and Team Working | Quick Learner | Problem Solving
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R e f e r e n c e s

- **Dr. Kamran Dehghani** (Full Professor)
Department of Materials and Metallurgical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Iran
Email: dehghani@aut.ac.ir
- **Dr. Nader Parvin** (Full Professor)
Department of Materials and Metallurgical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Iran
Email: nparvin@aut.ac.ir
- **Dr. Ali Farzadi** (Associate Professor)
Department of Materials and Metallurgical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Iran
Email: farzadi@aut.ac.ir
- **Dr. Pirooz Marashi** (Associate Professor)
Department of Materials and Metallurgical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Iran
Email: pmarashi@aut.ac.ir
- **Mr. Reza Bahrami** (Metal Forming & Powder Metallurgy Labs Director)
Department of Materials and Metallurgical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Iran
Email: r.bahrami@aut.ac.ir