

# CURRICULUM VITAE

## ALIREZA KARIMI



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### EDUCATION

- 2017-2020 | *Iran University of Science and Technology (IUST)* *TEHRAN, IRAN*  
**M.Sc. in Materials Engineering**  
• **GPA:** 80 / 100  
• **Thesis Title:** Investigating the parameters affecting the joining of tungsten carbide to low-alloy steel using combustion synthesis reactions of Ni-Ti powder mixture  
• **Supervisors:** Prof. M. Adeli ([adelim@iust.ac.ir](mailto:adelim@iust.ac.ir)), Prof. M. Soltanieh ([mansour\\_soltanieh@iust.ac.ir](mailto:mansour_soltanieh@iust.ac.ir))
- 2013-2017 | *Golpayegan College, Isfahan University of Technology (IUT)* *ISFAHAN, IRAN*  
**B.Sc. in Metallurgy and Materials Engineering**  
• **GPA:** 73 / 100 (via 142 credits), last two years = 90 / 100  
• **Thesis Title:** Production of amorphous Fe-Ni-Cr coatings by electric deposition process  
• **Supervisor:** Prof. S. M. Rafiaei ([rafiaei@gut.ac.ir](mailto:rafiaei@gut.ac.ir))

### RESEARCH INTERESTS

- Advanced Materials (e.g., Nanomaterials, Shape Memory Alloys, Energy Storage Materials) Synthesis, Welding, Processing and Characterization
- Data analysis and data science
- Numerical Modelling (FEM, CFD)
- Additive Manufacturing (3-D Printing)

### RESEARCH EXPERIENCES

#### Investigating the effect of Mechanical Activation Duration (MAD) on microstructure and corrosion behavior of TiAl intermetallic compounds (In process)

- 2021-present | *Supervisors: Prof. M. Adeli*  
**School of Materials and Metallurgy Engineering, IUST**
- Fabricated **NiAl Intermetallic compounds** with various MAD via SHS process
  - Performed **microstructural characterization** (SEM) of TiAl samples with various MADs.
  - Investigated **corrosion behavior** of TiAl samples with **various MAD** (In process)

#### Joining of tungsten carbide to low carbon steel by using combustion synthesis reactions

- 2018-2020 | *Supervisors: Prof. M. Adeli, Prof. M. Soltanieh*  
**School of Materials and Metallurgy Engineering, IUST**
- Fabricated WC-Co / VCN-150 **dissimilar joint** via **combustion synthesis** in **Ni-Ti** compound

- **Designed and fabricated** a novel **set-up** for exerting **an axial force** on the welding components in the **Argon** atmosphere and **decreasing** the interlayer **porosity**
- Performed **microstructural characterization** of joint layer using **(SEM)**, **mechanical characterization** of joint using **Shear strength** test and **Micro hardness** Profile test and phase analysis of interlayer via **XRD** techniques

### Effect of space holder materials on the porosity of synthesized Ni-Ti products

2019-2020

*Supervisors: Prof. M. Adeli*

**School of Materials and Metallurgy Engineering, IUST**

- **Quantified** the impact of **space holder** materials on the **distribution** and **size** of the porosities in the synthesized Ni-Ti intermetallic compounds
- Performed **microstructural characterization (SEM)** on samples and **Phase analysis** of samples via **XRD** techniques

### Investigating the possibility of establishing steel-steel joints using combustion synthesis reactions

2018-2019

*Supervisors: Prof. M. Adeli, Prof. M. Soltanieh*

**School of Materials and Metallurgy Engineering, IUST**

- **Fabricated** VCN-150 / VCN-150 **joint** via combustion synthesis in **Ni-Ti** compound
- **Designed and fabricated** a novel **set-up** for exerting **an axial force** on the welding components in the **Argon** atmosphere for the sake of decreasing interlayer **porosity**
- **Performed microstructural (SEM) characterization** of joints and phase analysis of interlayer via **XRD** techniques

### Fabrication of amorphous Fe-Ni-Cr coatings by electric deposition process

2015-2017

*Supervisors: Prof. M. S. Rafiaei*

**School of Materials and Metallurgy Engineering, IUT**

- Investigated the effect of **current density** on **coating thickness** and coating structure (**amorphous and crystalline**)

## PUBLICATIONS

### JOURNAL ARTICLES

- A. Karimi, M. Adeli, M. Soltanieh, **Dissimilar joining of cemented carbide to low-carbon steel via combustion welding: Effect of process parameters on the interfacial microstructure and joint strength**, Journal of Manufacturing Process, Vol. 77, Pages 551-560, <https://doi.org/10.1016/j.jmapro.2022.03.043>
- A. Karimi, M. Adeli, M. Soltanieh, **The application of combustion synthesis reactions in Ni-Ti system in the joining of steel to tungsten carbide**, Journal of New Materials, Vol. 11, pages 103-114, [20.1001.1.22285946.1399.11.41.8.2](https://doi.org/10.22285/946.1399.11.41.8.2)

### CONFERENCE PAPER

- A. Karimi, M. Adeli, M. Soltanieh, **Investigating the possibility of establishing steel-steel joints using combustion synthesis reactions**, 8th International Conference and Exhibition on Materials Engineering and Metallurgy Oct. 2019, <https://civilica.com/doc/963690/>

## HONORS AND AWARDS

- **Awarded governmental full scholarship (Tuition Waiver) and governmental fund (Research Grant) from Iran University of Science and Technology**  
Issued by Ministry of Science, Research and Technology · Sep 2017  
Awarded to the results of national entrance exam for 2-3 years of M.Sc.
- **Awarded governmental full scholarship (Tuition Waiver) and governmental fund (Research Grant) from Isfahan University of Technology**  
Issued by Ministry of Science, Research and Technology · Sep 2013  
Awarded to the results of national entrance exam for 4-5 years of B.Sc.

## TEACHING EXPERIENCES

- Graduate Teaching Assistant of **Metallurgical Process Laboratory (Sept 2017 – Jan 2018)**  
**Instructor: Prof. M. Adeli ([adelim@iust.ac.ir](mailto:adelim@iust.ac.ir)),**  
**School of Materials and Metallurgy Engineering, Iran University of Science and Technology**

## WORK EXPERIENCES

### Metallurgical Laboratory Manager

Sep2021-Now	ATASHGAH STEEL COMPANY	ISFAHAN, IRAN
	<ul style="list-style-type: none"><li>• <b>Teamwork leadership</b> in the <b>research and technological development</b> group</li><li>• <b>Performed workshops</b> for laboratory members to improve their laboratory skills</li><li>• <b>Supervision</b> of equipment's <b>calibration</b></li></ul>	

### Metallurgical Laboratory Expert

2021(Feb-Sep)	HAMIRAN STEEL COMPANY	TEHRAN, IRAN
	<ul style="list-style-type: none"><li>• Acquired <b>Hands-on</b> experience with <b>microstructural characterization equipment</b> (SEM, FESEM, EBSD,OM), <b>Optical Emission Spectroscopy</b> (Foundry Master), Universal <b>tensile testing</b> (Gotech)</li></ul>	

### Patent Engineer (USPTO)

2020(Jan-Oct)	IDI COMPANY	TEHRAN, IRAN
	<ul style="list-style-type: none"><li>• I worked as a <b>patent engineer</b> in issuing <b>patent</b> certificates for inventors</li></ul>	

### Scientific Student Administrator (Volunteer)

2015-2017	SCHOOL OF MATERIALS AND METALLURGY ENGINEERING, IUT	TEHRAN, IRAN
	<ul style="list-style-type: none"><li>• <b>Organized</b> several <b>extracurricular activities</b> for materials engineering students</li><li>• <b>Administrated</b> various industrial visits for students</li></ul>	

### Engineering Internship

2016(Apr-Sep)	ISFAHAN STEEL COMPANY	ISFAHAN, IRAN
	<ul style="list-style-type: none"><li>• Performed <b>standardized mechanical and microstructural QA tests</b> (ASTM, ISO, DIN)</li></ul>	

## TECHNICAL SKILLS AND CERTIFICATES

### Laboratory Skills

- **Hands-on experience** working with **microstructural characterization equipment** (Field Emission Scanning Electron Microscope, Scanning Electron Microscope, Optical Microscope, Laser Microscope), **Optical Emission Spectroscopy** (Foundry Master), **Universal tensile testing** (Gotech), **Universal Hardness Tester**, and **pyrometallurgy lab equipment** (e.g., tube furnace & induction furnace)

### Certificates

- **Transmission electron microscopy** for materials science (EPFL)
- **Programming for Everybody (Getting Started with Python)** (University of Michigan)
- **Conference Presentation** certificate (8th International **Imat** Conference)
- **What is Data Science?** (IBM)
- **Data Science Orientation** (IBM)
- **Materials Data Science and Informatics** (Georgia Institute of Technology)
- **HSE** certificate (Iran University of Science and Technology)

## COMPUTER SKILLS

### Engineering Software

- |                    |              |
|--------------------|--------------|
| • Ansys, Tecplot   | • SOLIDWORKS |
| • HighScore (plus) | • Origin     |
| • Microsoft Office | • Minitab    |
| • EC-Lab           | • Zsim       |

### Programming Language

- Python

## LANGUAGE SKILLS

**Persian:** Native Language

**English:** Fluent

- **TOEFL (iBT):** On September 2023

## REFERENCES

- Dr. Mansour Soltanieh, Professor of Materials and Metallurgical Engineering, Iran University of Science and Technology, [mansour\\_soltanieh@iust.ac.ir](mailto:mansour_soltanieh@iust.ac.ir)
- Dr. Mandana Adeli, Assistant Professor of Materials and Metallurgical Engineering, Iran University of Science and Technology, [adelim@iust.ac.ir](mailto:adelim@iust.ac.ir)
- Dr. S. M. Rafiaei, Assistant Professor of Materials and Metallurgical Engineering, Golpayegan College of Engineering, Isfahan University of Technology, [rafiaei@gut.ac.ir](mailto:rafiaei@gut.ac.ir)