


# 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:** 84 / 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 year = 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 EXPERIENCE

#### 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** 316-steel / 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 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/10.1001.1.22285946.1399.11.41.8.2)

### 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 from Iran University of Science and Technology (Tuition Waiver)**

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 fund from Iran University of Science and Technology (Research Grant)**

Issued by Ministry of Science, Research and Technology · Sep 2017

- **Awarded governmental full scholarship from Isfahan University of Technology (Tuition Waiver)**

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 (B.Eng).

- **Awarded governmental fund from Isfahan University of Technology (Research Grant)**

Issued by Ministry of Science, Research and Technology · Sep 2013

## 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*

- **Teamwork leadership** in the **research and technological development** group
- **Performed workshops for laboratory members to improve their laboratory skills**
- **Supervision** of equipment's **calibration**

### Metallurgical Laboratory Expert

2021(Feb-Sep)

*HAMIRAN STEEL COMPANY*

*TEHRAN, IRAN*

- Acquired **Hands-on** experience with **microstructural characterization equipment** (SEM, FESEM, EBSD,OM), **Optical Emission Spectroscopy** (Foundry Master), Universal **tensile testing** (Gotech)

### Patent Engineer (USPTO)

2020(Jan-Oct)

*IDI COMPANY*

*TEHRAN, IRAN*

- I worked as a **patent engineer** in issuing **patent** certificates for inventors

### Scientific Student Administrator (Volunteer)

2015-2017

*SCHOOL OF MATERIALS AND METALLURGY ENGINEERING, IUT*

*TEHRAN, IRAN*

- **Organized** several **extracurricular activities** for materials engineering students
- **Administrated** various industrial visits for students

## Engineering Internship

2016(Apr-Sep) | *ISFAHAN STEEL COMPANY*

*ISFAHAN, IRAN*

- Performed **standardized mechanical and microstructural QA tests** (ASTM, ISO, DIN)

## 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

- **Materials Data Science and Informatics** (acquired from Coursera)
- **Programming for Everybody (Getting Started with Python)** (acquired from Coursera)
- **What is Data Science?** (acquired from Coursera)
- **Data Science Orientation** (acquired from Coursera)
- **Transmission electron microscopy** for materials science (acquired from Coursera)
- **HSE certificate** from the Iran University of Science and Technology

## COMPUTER SKILLS

### Engineering Software

- ANSYS, Tecplot
- Highscore (plus)
- Microsoft Office
- Solidworks
- Origin
- Minitab

### Programming Language

- Python

## LANGUAGE SKILLS

### Farsi : Native Language

### English

- **TOEFL Test (iBT):** It will be passed on December 17.

## 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)