# 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), Prof. M. Soltanieh (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)

## 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

### 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),**
  **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

**Persian:** Native Language
**English:** Fluent

- **TOEFL (iBT):** Will be taken at February 14th, 2023

## REFERENCES

- Dr. Mansour Soltanieh, Professor of Materials and Metallurgical Engineering, Iran University of Science and Technology, **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**
- Dr. S. M. Rafiaei, Assistant Professor of Materials and Metallurgical Engineering, Golpayegan College of Engineering, Isfahan University of Technology, **rafiaei@gut.ac.ir**