

# Curriculum Vitae



## **A. Personal Information**

- **Name:** Seyyed Alireza Hosseini
- **Date of Birth:** 27 February 1984
- **Address:** Department of Materials and Polymer Engineering, Hakim Sabzevari University, PO box 397, Sabzevar, Iran.
- **E-mail:** sar.hosseini@hsu.ac.ir, s.alirezahosseini@yahoo.com

## **B. Education**

- **Ph.D. (Materials Engineering, 2008-2013):**  
Nano-Technology & Advanced Materials Department, **Materials and Energy Research Center**, Karaj, Iran. <https://en.merc.ac.ir/>  
**Thesis:** Mechanical Behavior and Superelasticity of High Porous NiTi-X Shape-memory Alloys.
- **M.Sc. (Materials Identification & Selection, 2005-2008):**  
Materials Science and Engineering Department, **Sharif University of Technology**, Tehran, Iran. <http://www.en.sharif.edu/>  
**Thesis:** Superelasticity vs. Thermoelasticity in NiTi Shape Memory Alloys Fabricated by Powder Metallurgy Method.
- **B.Sc. (Extractive Metallurgy, 2001-2005):**  
Materials Engineering Department, **Isfahan University of Technology**, Isfahan, Iran. <http://english.iut.ac.ir/>  
**Dissertation:** Effect of Heat treatment on Mechanical Behavior and Microstructure of Spot-welded Aluminum Sheets

## **C. Professional Experience**

- Assistant Professor  
Department of Materials Engineering and polymer, Hakim Sabzevari University (2013-now)
  - Group leader (a group of 10 BSc, 7 MSc and 6 PhD students), safety officer and research adviser to graduate and undergraduate students
  - Carry teaching load (10 courses annually) with administrative obligations
  - Conducting projects and researches in the fields of electrochemistry, materials and surface

engineering, and metallurgy to develop various alloys and coatings for biomedical, automotive, catalyst, and renewable energy industries, including:

- ✓ Fabrication of MXene-based photocatalyst for water splitting
- ✓ Development of efficient electrocatalyst for oxygen evolution reaction using electrodeposition, sputtering, electrophoretic, and hydrothermal techniques
- ✓ Development of nanocatalysts for removing pollutants compounds like CO from flue gases
- ✓ Fabrication and characterization of superhydrophobic surface and tailoring the wettability of alloys using (electro)chemical and thermal treatments
- ✓ Development of Ni-based composite coatings as the corrosion-resistant coatings
- ✓ Development of porous magnesium by infiltration casting for biomedical applications
- ✓ Enhancing the biocompatibility of NiTi alloy by electrochemical dealloying
- ✓ Surface alloying of different aluminum alloys through friction stir alloying process  
<http://www.hsu.ac.ir/en/>

- Counselor with Iran Nanotechnology Initiative Council (INIC) (2012-2014)
  - Cooperation in the field of standardization of nanotechnology products
- Research Assistant and Senior Laboratory Consultant, Materials and Research Center (MERC) (2010- 2013)
  - Synthesis, characterization, and mechanical behavior of shape memory alloys NiTi foams
  - Co-supervision of graduate and undergraduate students on different surface engineering projects, including shape memory alloys, foams, powder metallurgical methods, electroless deposition, plasma electrolytic processes (oxidation, cleaning, and deposition)
  - Teaching assistant for thermodynamics and nanotechnology courses
- Counselor with Iran Nanotechnology Laboratory Network (INLN) (2010-2013)

## **D. Teaching Experience**

### **Graduate courses**

- Advanced Surface Engineering (Ph.D.: 2 semester, M.Sc.: 4 semester)
- Electrochemistry (Ph.D.: 2 semester)
- Fundamental of Nanotechnology (M.Sc.: 3 semester)
- Advanced Powder Metallurgy (M.Sc.: 4 semester)
- Advanced Thermodynamics (M.Sc.: 1 semester)

### **Undergraduate courses**

- Surface Engineering (B.Sc.: 8 semester)
- Corrosion Engineering (B.Sc.: 5 semester)
- Thermodynamic of Materials (B.Sc.: 15 semester)

## **E. Research Interests**

- Surface Engineering and Coatings
- Nano-catalysts (in energy and environmental applications)
- Porous Materials (in biomedical application)
- Shape Memory Alloys

## **F. Research Supervision/Collaboration Experience**

- Effect of silicon addition on the mechanical, corrosion and biocompatibility of magnetron sputtered tantalum carbide coating (Supervisor, Hakim Sabzevari University (HSU) in collaboration with Prof. Petr Vašina from Masaryk University (Czech Republic), M.Sc. in Materials Engineering, in progress)
- Fabrication of Ni-Mo\CNT coatings by electrodeposition under ultrasonic waves and study of their electrocatalytic behavior (Supervisor, Hakim Sabzevari University (HSU), M.Sc. in Materials Engineering, in progress)
- Electrocatalytic behavior hierarchical nickel coating decorated by molybdenum and iron seeds (Supervisor, Hakim Sabzevari University (HSU), M.Sc. in Materials Engineering, in progress)
- Investigation of mechanical and corrosion behavior of nickel-phosphor composite electroless coating reinforced with MAX and MXene phase particles (co-researcher, Islamic Azad University, in progress)
- Wettability behavior of hierarchical micro/nanostructure metallic surface tailored by electrochemical methods (supervisor, Hakim Sabzevari University (HSU), PhD in Materials Engineering, 2020)
- Electrochemical water oxidation with cobalt and iron oxide electrocatalysts fabricated by electrophoretic (supervisor, Hakim Sabzevari University (HSU), M.S. in Materials Engineering, 2020)
- Catalytic behavior of nanostructured Ni-B layers for water splitting reaction (co-supervisor, Hakim Sabzevari University (HSU), M.S. in Materials Engineering, 2020)
- Development of steel-based electrocatalysts through surface oxidation for water splitting (supervisor, Hakim Sabzevari University (HSU), M.S. degree, 2020)
- Fabrication of Al/Mg solid solution layer on pure aluminum by friction stir processing (supervisor, Hakim Sabzevari University (HSU), M.S. in Materials Engineering, 2020)
- Fabrication and Characterization of Porous Magnesium Components for use in medical Application (supervisor, Hakim Sabzevari University (HSU), M.S. in Materials Engineering, 2019)
- Nanostructures Iron oxide catalysts film by combination of electrodeposition of iron and anodic oxidation for water splitting reaction (supervisor, Hakim Sabzevari University (HSU), M.S. in Materials Engineering, 2018)
- Study of thermal stability of nanostructured alloys processed by mechanical alloying (co-supervisor, Hakim Sabzevari University (HSU), M.S. in Materials Engineering, 2018)

- The cobalt/copper oxide nano-composites for co-oxidation catalysts alternative to precious group metals (supervisor, HSU, M.S. in Materials Engineering, 2018)
- Multi-Layer Nano Composite Coating Based on Nickel Electroless for Continuous Casting Molds (supervisor, HSU, M.S. in Materials Engineering, 2017)
- Surface modification of NiTi shape memory alloys by chemical and electrochemical methods (supervisor, HSU, M.S. in Materials Engineering, 2016)
- A strategic road-map on fabrication and application of shape memory NiTi alloys (co-researcher, Sharif University of Technology, 2011).
- Fabrication of NiTi by SHS method (co-researcher, MERC, 2011).
- Comparative biocompatibility evaluation of NiTi implant versus conventional implants in radial bone in rabbit, MERC, 2008. (co-researcher, Materials and Energy Research Center (MERC), 2008)
- Application of nanostructure iron oxide for removal poisoning emission gas (co-researcher, MERC, 2010).

## G. Publications

### Journal papers

- S. Akbarinia, S.K. Sadrnezhad, **S.A. Hosseini**, “Porous Shape Memory Dental Implant by Reactive Sintering of TiH<sub>2</sub>-Ni-Urea Mixture,” *Materials Science & Engineering C*, p. 110213, 2020.
- M. Safarpour, **S.A. Hosseini**, F.Ahadani-Targhi, P. Vašina, M. Alishahi, “A transition from petal-state to lotus-state in AZ91 magnesium surface by tailoring the microstructure,” *Surface and Coatings Technology*, vol. 383, p. 125239, 2020.
- B. Maleki, H. Natheghi, R. Tayebee, H. Alinezhad, A. Amiri, **S.A. Hossieni**, “Synthesis and Characterization of Nanorod Magnetic Co-Fe Mixed Oxides and its Catalytic Behavior Towards One-Pot Synthesis of Polysubstituted Pyridine Derivatives,” *Polycycl. Aromat. Compd.*, vol. 0, no. 0, pp. 1-11, May 2018.
- M. Alizadeh, **S.A. Hosseini**, S. M. M. Nouri, Z. Khalighi, and B. Delfarah, “Low-cost nanostructured Fe<sub>2</sub>O<sub>3</sub> -based composite catalysts synthesized by mechanical milling for CO oxidation reaction,” *Chem. Eng. Commun.*, vol. 205, no. 8, pp. 1–9, 2018.
- **S.A. Hosseini**, “Mechanical Degradation of Porous NiTi Alloys under Static and Cyclic Loading,” *Shape Mem. Superelasticity*, vol. 3, no. 4, pp. 476–484, Dec. 2017.
- **S.A. Hosseini**, S. Akbarinia, D. Mohammadyani, and S. K. Sadrnezhad, “Enhanced corrosion resistance of porous NiTi with plasma sprayed alumina coating,” *Corros. Eng. Sci. Technol.*, vol. 50, no. 8, pp. 595–600, 2015.
- **S.A. Hosseini**, A. Kazemzadeh, and M. Alizadeh, “A Comparative Study on the Mechanical Behavior of Porous Titanium and NiTi Produced by a Space Holder Technique,” *J. Mater. Eng. Perform.*, vol. 23, no. 3, pp. 799–808, March 2014.

- **S.A. Hosseini**, R. Yazdani-rad, A. Kazemzadeh, and M. Alizadeh, “Influence of Thermal Hydrogen Treatment of Titanium Particles on Powder Metallurgical Processing of NiTi-SMA,” *Mater. Manuf. Process.*, vol. 28, no. November, pp. 37–41, 2013.
- **S.A. Hosseini**, M. Alizadeh, A. Ghasemi, and M. a. Meshkot, “Highly Porous NiTi with Isotropic Pore Morphology Fabricated by Self-Propagated High-Temperature Synthesis,” *J. Mater. Eng. Perform.*, vol. 22, pp. 405–409, Jul. 2013.
- **S.A. Hosseini**, R. Yazdanirad, A. Kazemzadeh, M. Alizadeh, “Effect of Pore Content on Mechanical Properties of Porous Nitinol under Compressive Loading”, *Journal of Advanced Materials and Technologies*, Vol. 2, No. 2, pp. 45-52, Summer 2013 (In Persian).
- M. Meybodi, **S.A. Hosseini**, M. Rezaee, S. K. Sadrnezhaad, and D. Mohammadyani, “Ultrasonics Sonochemistry Synthesis of wide band gap nanocrystalline NiO powder via a sonochemical method,” *Ultrason. – Sonochemistry*, vol. 19, no. 4, pp. 841–845, 2012.
- A. Ghasemi, **S.A. Hosseini**, and S. K. Sadrnezhaad, “Pore control in SMA NiTi scaffolds via space holder usage,” *Mater. Sci. Eng. C*, vol. 32, no. 5, pp. 1266–1270, 2012.
- Mohammadyani, **S.A. Hosseini**, and S. K. Sadrnezhaad, “Characterization of Nickel Oxide Nanoparticles Synthesized via Rapid Microwave-Assisted Route,” *Int. J. Mod. Phys. Conf. Ser.*, vol. 5, pp. 270–276, 2012.
- **S.A. Hosseini** and M. Alizadeh, “Characterization and Catalytic Behaviour of Nanostructured Iron Oxide Powder from Waste Pickle Liquor of Steel Industry,” *Int. J. ISSI*, vol. 7, no. 1, pp. 21–24, 2010.
- **S.A. Hosseini**, S. K. Sadrnezhaad, and a. Ekrami, “Phase transformation behavior of porous NiTi alloy fabricated by powder metallurgical method,” *Mater. Sci. Eng. C*, vol. 29, no. 7, pp. 2203–2207, Aug. 2009.
- K. Sadrnezhaad and **S.A. Hosseini**, “Fabrication of porous NiTi-shape memory alloy objects by partially hydrided titanium powder for biomedical applications,” *Mater. Des.*, vol. 30, no. 10, pp. 4483–4487, Dec. 2009.

### **Conference Papers (selected)**

- M. karimi-doost and **S.A. Hosseini**, Surface Modification of Superelastic NiTi Alloys by Electrochemical Dealloying Method, 12th Annual Electrochemistry Seminar of Iran, Tarbiat Modarres University 19- 20 October, 2016.
- Shahriyar Akbarinia, S.K. Sadrnezhaad, **S. Alireza Hosseini**, Prospects of using powder metallurgy method to produce Nitinol shape memory dental implant, 3rd International Engineering Materials and Metallurgy, (iMat), Tehran, Iran, 2014.
- S.K. Sadrnezhaad, Shahriyar Akbarinia, Ali Salemi Golozani, **S. Alireza Hosseini**, and F. Akbarinia, Structural Relaxation and Phase Transformation of Nanostructured/Amorphous NiTi during Sintering, The First International and sixth Joint Conference of Iranian Metallurgical Engineering Society and Iranian Fundurymen’s Society, 2012.
- **S.A. Hosseini**, A. Ghasemi, R. Yazdani-rad, A. Kazemzadeh, M. Alizadeh, A. Paksersht, Compressive behavior of high-porosity NiTi, The First International and sixth Joint

- Conference of Iranian Metallurgical Engineering Society and Iranian Fundurymen's Society, 2012.
- **S.A. Hosseini**, R Yazdani-rad, A Ghasemi, A Kazemzadeh, Improvement of SMA-NiTi Sintering by Thermally Treated of Titanium Powder under Hydrogen Atmosphere, 3 rd. International Conference on Materials Heat Treatment (ICMH 2012), Islamic Azad University, Majlesi Branch, May 30-31, 2012, Isfahan, Iran.
  - **S.A. Hosseini**, A. Ghasemi, S.K. Sadrnezhaad, A. Ekrami, Phase Transformation Behaviour of Porous NiTi Alloys Produced by Space-holder Method, 2nd International Conference on Materials Heat Treatment (ICMH 2011), May 10-12, Isfahan, Iran.
  - **S.A. Hosseini**, A. Ghasemi, S. K. Sadrnezhaad, "Effect of Aging Treatment and Cooling Rate on Phase Transition Temperature of Porous NiTi", 4th Iranian joined conference of metallurgist engineers and scientific committee of casting, University of Science & Technology, Tehran, Iran, November 2010. (In Persian)
  - M. Alizadeh, **S.A. Hosseini** and B. Seifi, "Behavior of nanostructure iron oxide for removal carbon monoxide from industrial stack emission gas", 14th Conference on Environment and Mineral Processing, VSB - Technical University of Ostrava, Czech Republic, 3-5 June 2010.
  - D. Mohammadyani, **S.A. Hosseini**, S.K. Sadrnezhaad, "Sonochemical Synthesis of Nickel Oxide Nano-particle", 3rd Conference on Nanostructures (NS2010), Kish Island, I.R. Iran, March 2010.
  - **S.A. Hosseini**, D. Mohammadyani, S.K. Sadrnezhaad, "Effect of Alumina Coating on Corrosion Behaviour of Porous NiTi Parts", 16th Conference on Iranian Biomedical Engineers, Imam Khomeini Clinical Complex, Tehran, Iran, 29-30 September 2009. (In Persian)
  - D. Mohammadyani, **S.A. Hosseini**, S.K. Sadrnezhaad, "Characterization of Nickel Oxide Nanoparticles Synthesized VIA rapid microwave-Assisted Route", 2nd International Conference on Ultrafine Grained and Nanostructured Materials Center of Excellence For High Performance, Materials School of Metallurgy and Materials Engineering University, College of Engineering, University of Tehran, Tehran, Iran. 14-15 November 2009.
  - **S.A. Hosseini**, S.K. Sadrnezhaad, A. Ekrami, "Mechanical Behavior of Porous NiTi Fabricated by Powder Metallurgy Method for Biomedical applications", Second Iranian joined conference of metallurgist engineers and scientific committee of casting, Azad University, Karaj, Iran, November 2008. (In Persian)
  - **S.A. Hosseini**, S. K. Sadrnezhad, "Fabrication of NiTi-SMA parts by powder metallurgy for biomedical application", First Iranian joined conference of metallurgist engineers and scientific committee of casting, Zobahan Co., Isfahan, Iran, October 2007. (In Persian).

#### **Under review manuscripts**

- Jaber Asadi, Bahman Korojy, **S. Alireza Hosseini**, Mostafa Alishahi, Effect of cell structure on mechanical and bio-corrosion behaviour of biodegradable Mg-Zn-Ca foam. Submitted to Materials Today Communications, (Q2, impact factor: 3.383).

- **S. Alireza Hosseini**, Mehri Karimidoost, Morteza Mehrjoo, Mostafa Alishahi, Electrochemical dealloying of porous NiTi alloy: Porosity evolution, corrosion resistance, and biocompatibility behaviour, Submitted to Intermetallics, (Q1, impact factor: 3.758).
- Q. Asrari, M.H. Daneshifar, **S. Alireza Hosseini**, M. Alishahi, Fabrication of Al-Mg Solid Solution by Friction Stir Selective Alloying, Submitted to Materials Letter, (Q2, impact factor:3.423).

### **Patents**

- IR Patent No.: 43203-386051006, 2007, Inventors: **S.A. Hosseini**, S.K. Sadrnezhad.
- IR Patent No.: 66001-389030496, 2010, Inventors: D. Mohammadyani, **S.A. Hosseini**, S.K. Sadrnezhad.
- IR Patent No.: 65998-389030497, 2010, Inventors: D. Mohammadyani, **S.A. Hosseini**, S.K. Sadrnezhad.

### **H. Academic Honors and Awards**

- Ranked 12<sup>th</sup> among about 3000 graduate applicants. (Nation-wide entrance exam of universities in Iran, 2005)
- The selected teacher of the year in Hakim Sabzevari University, 2017.

### **I. Languages**

- Farsi: Native
- English: Professional Working Proficiency
- Arabic: Intermediate