

IN THE NAME OF ALLAH, MOST GRACIOUS AND MERCIFUL

Personal Information

First Name: Shahab
Last Name: Ahmadi Seyedkhani
Email Address: sh.ahmadi@sharif.edu | ahmadiseyedkhani@gmail.com
Address: Institute for Nanoscience and Nanotechnology (INST), Sharif University of Technology, Azadi Avenue, P.O. Code: 14588-89694, Tehran, Islamic Republic of Iran
Phone Number: +9809380983027

Education Background

PhD

University: Sharif University of Technology
Major: Nanoscience and Nanotechnology
Thesis:
Supervisor:

MSc.

University: Sharif University of Technology (2014)
Major: Materials Science and Engineering – Nanotechnology
Thesis: *Design and Manufacture of Nanostructured Hydroxyapatite Coated Foamy Core@Compact Shell Ti6Al4V Nanocomposite*
Supervisor: Prof. S.K. Sadrzehaad

BSc.

University: Shahid Bahonar University of Kerman (2012)
Major: Materials Engineering – Extractive Metallurgy
Thesis: *Investigation on Production Possibility of Al_2O_3 -ZrB₂ In Situ Composite via Mechanical Activation*
Supervisor: Prof. Sh. Sharafi



Research Interests

- ◆ Energy Conversion and Storage
- ◆ Nanoelectronics and Sensors
- ◆ Bionanomaterials

Research Experiences and Collaborations

- 2019-2020
- Institute for Nanoscience and Nanotechnology (INST), Sharif University of Technology
 - *Evaluation of Hierarchical Micro/Nanostructured Layers: Tunable Antibacterial and bioactive TiO₂ Nanostructured Coatings on Ti Implants*
 - Advanced Bionanomaterials Laboratory, Department of Materials Science and Engineering, Sharif University of Technology
 - *High Efficiency Drug Encapsulation in TiO₂ Nanotubes Layer via Electrophoretic Deposition Technique*
 - *Develop Drug Release Time by Optimization of Carrier Characteristics and Loading Process*
- 2017-2018
- Researcher at Advanced Bionanomaterials Laboratory, Department of Materials Science and Engineering, Sharif University of Technology
 - *Nano-fibrous nanocomposite: Fabrication and Characterization of PEO-Chitosan/TiO₂ Nanocomposite Fibers by Electrospinning*
 - *Smart coatings: Design and Manufacture of PEO/Chitosan/TiO₂ Nanofibers*
 - *Investigation on Controllable Release of Vancomycin from Perpendicular TiO₂ Nanotubes Coated by Biodegradable Polymeric Nanocomposite Nanofibers*
 - *In Situ Synthesis of GO/TNTs Thin Films by Anodic Oxidation (In Progress)*
 - *Fabrication of TNT/PEO-Chitosan/TiO₂ Nanocomposite Multi-Layer coatings on Ti6Al4V Implants*
 - *Rapid Growth of Highly Ordered TiO₂ Nanotubes on Ti6Al4V Implants by Anodization [-1.4 nm/s]*
 - *Optimization of Organic-based Anodization (Anodic Oxidation Process)*
- 2012-2015
- Researcher at Research Center of Materials Production and Processing, Department of Materials Science and Engineering, Sharif University of Technology
 - *Porous Materials and Metallic Foams: Design and Manufacture of Porous Ti6Al4V Implants by Space Holder Technique.*

- Synthesis of Nanostructured Ceramic Nanocomposite Coatings: Pulse Electrodeposition of HA/TiO₂ and TNT/HA Multi-Layer Coatings on Ti Implants
 - Synthesis of TiO₂ nanotubes arrays on Ti6Al4V Alloy by Aqueous Electrolyte
 - Top Down Production of Ti6Al4V Powder using Ball Milling
 - In Vitro Biological Analysis of Hard Tissue Implants (Pasteur Institute)
 - Heat treatments and phase transformation Studies
 - Nanomechanical properties Analysis: Investigation on Nanohardness, Nanoscratch and Roughness of TiO₂ Nanotube Arrays and Hydroxyapatite Thin Films using AFM Equipped with Nanoindentation
 - Multi-steps Sintering
 - Design and Assemble of Protective Atmosphere Furnaces (Laboratory Scale)
 - Sample preparation, Metallography and Machining
 - Research assistance at Research Center of Advanced Ceramics, Department of Materials Science and Engineering, Sharif University of Technology
 - Design and Fabrication of Porous Piezoelectric PZT-PCN Nanoceramics
- 2010-2012
- Powder Metallurgy and Milling Laboratory, Department of Materials and Metallurgy Engineering, Shahid Bahonar University of Kerman
 - Mechanical Activation and In Situ Fabrication of Al-based Nanocomposites

Work Experiences

- 2019- Present
- Research & Development Department, Barsoo Engineering company, Tehran, Iran
 - Book Entitled: "Inspection of Industrial Refractories" (In Progress)
 - Technical Study of Making Paper from Bagasse
 - Investigation on Reduce/Reuse/Recycle (3R) Strategies of Water Consumption in Iron and Steel Industries
 - Pre-feasibility Study for Manufacturing Process of White Fused Alumina (WFA)
 - Acrylonitrile: Technical Study of Production Processes, Properties and Applications
 - Technical Study of Desulfurization Units and Their Mechanisms for Direct Reduction Process
 - Pre-feasibility Study for Manufacturing of Needle Coke: An Investigation on Effect of Delayed Coking Process Parameters on Production of Needle Coke
 - Hydrated Lime (Calcium Hydroxide): Technical studies
 - Pre-feasibility Study for "Magnetite Nanoparticles" from Tailing (Patent)
- 2017-2018
- Researcher and Laboratory Expert, Advanced Bionanomaterials Laboratory, Department of Materials Science and Engineering, Sharif University of Technology, Tehran, Iran
- 2015-2016
- Research Assistant, Advanced Bionanomaterials Laboratory, Department of Materials Science and Engineering, Sharif University of Technology, Tehran, Iran
- 2014-2015
- Researcher, R&D Association of Coatings and Thin Films, "Negahe No" company, Tehran, Iran
- 2012
- Internship, Almahdi Aluminium company, Bandar Abbas, Hormozgan, Iran
 - Reduction Lines to Produce Metal Aluminium
 - Electric Unit and Rectifiers
 - Cast House
 - Green Mill Plant
 - Anode Baking Furnaces and Anode Rodding Plant
 - Materials Handling System
 - Internship, Bandar Abbas Zinc Production Company, Bandar Abbas, Hormozgan, Iran

Courses & Certificates

- ◆ Principles and Tactics of Effective Negotiation, Barsoo Engineering Company, Tehran, Iran (2019-2020)
- ◆ Project Management and Standard Requirements Based on ISO 21500 Standard, Barsoo Engineering company, Tehran, Iran (2019)
- ◆ Developing of Researches and Development Strategy, Iran Chamber of Commerce, Industries, Mines and Agriculture (ICCIMA), Tehran, Iran (2019)
- ◆ Continues Improvement of KAIZEN, Barsoo Engineering company, Tehran, Iran (2019)
- ◆ Risk Management, Association of Petroleum Industry Engineering & Construction Companies (APEC), Tehran, Iran (2019)
- ◆ Evaluation of Petrochemical Products Market, Association of Petroleum Industry Engineering & Construction Companies (APEC), Tehran, Iran (2019)
- ◆ Molecular Dynamics and Monte Carlo simulation, Molecular Simulation World Group, Amirkabir University of Technology (Polytechnique University of Tehran), Tehran, Iran (2015)

- ◆ *Appreciation for Executive Collaboration, 3rd International Joint Conference of Iranian Metallurgical Engineering and Iranian Foundry Men Society (iMat), Kerman, Iran (2008)*
- ◆ *Member of Iranian Institute of Welding and Non Destructive Testing (IWNT) (2007)*
- ◆ *Welding Inspection Certification (Level I), Iranian Institute of Welding and Non Destructive Testing (IWNT), Tehran, Iran (2007)*
- ◆ *Wood Mosaic (Level II) Certification, Iran Technical & Vocational Training Organization (IRTVTO), Gachsaran, Iran (2001)*

Lab Techniques

- X-Ray Diffraction and XRD Data Analysis
- Electron Microscopy (FESEM)
- Energy Dispersive X-Ray Spectroscopy (EDS)
- UV-Visible Spectroscopy
- Potentiodynamic Polarization Measurements
- Electrochemical Impedance Spectroscopy (EIS)
- Electrospinning
- BET Analysis
- Laboratory Furnaces (Vacuum, Tube, Box and Induction Furnaces)
- Ball Milling and Mechanical Alloying
- Vacuum and Temperature Humidity Glove Boxes
- Pulse and Direct Power Supplies (Programmable Current Density and Voltage)
- Probe and Bath Ultrasonic
- Vacuum and Humidity Control Glove Boxes
- Sample Preparation and Machining
- Metallography and Optical Microscopy

Software Knowledge

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| □ MATLAB | □ Nanoscope III (AFM analysis) |
| □ X'Pert Highscore | □ NAMD |
| □ Gaussian | □ LAMMPS |
| □ Visual Molecular Dynamics (VMD) | □ Gauss View |
| □ ZSim | □ Design of Expert (DOE) |
| □ NOVA | □ Office Collection |
| □ Triboscope® 3.5PL (Nanoindentation Analysis) | □ ConceptDraw Office PRO |
| □ JIRA | □ Visio |

Activities and Corporations

- ❖ **Invited Reviewer For :**
 - *Journal of Materials Science: Materials in Medicine - Springer (2017-Present)*
 - *Materials Letters - Elsevier (2016-Present)*
- ❖ **Agent of Research Association of Design and Performance of New Production and Development Processes of Sharif University of Technology at Iran Nanotechnology Initiative Council (2012)**
- ❖ **Managing Editor and Editor in Chief of the Scientific and Cultural Journal entitled RMS, Shahid Bahonar University of Kerman**
- ❖ **Cooperation in the Scientific Quarterly Journal of Patina, Student Scientific Association of Materials Science Department, Shahid Bahonar University of Kerman**
- ❖ **Cooperation in the First National Copper Conference, Shahid Bahonar University of Kerman (2009)**
- ❖ **Cooperation in the 1st Mineral Industries conference, Shahid Bahonar University of Kerman (2008)**
- ❖ **Present at 11th Iranian National Corrosion Congress, Graduate University of Advanced Technology, Kerman (2007)**
- ❖ **Winner of High School Soccer Tournament and Distinguished Player for Selected Soccer Team of The City, Ministry of Education (2005)**
- ❖ **Ranked 3rd at the First Round of Iranian National Olympiad in Informatics (INOI) [Computer Programming (QBasic) & ICDL Competition] Among High School Students (*The goal of the 1st round is to examine the mathematical knowledge and creativity of contestants Accompanying with Essential Computer Skills*) (2004)**
- ❖ **Winner of High School Soccer Tournament, Ministry of Education (2004)**
- ❖ **Winner of Middle School Soccer Tournament, Ministry of Education (2002)**
- ❖ **Winner of the Student Quranic Competitions (1996, 1997, 1998)**

Key Presentations

- ❖ **Diffusion Mechanisms in Nanostructured and Molecular Materials (Spring 2014)**
- ❖ **Photoelectrochemical Cells (Fall 2013)**

- ✧ Giant Magneto Resistance (GMRs) and Ferroelectricity in Nanomaterials (Fall 2013)
- ✧ PMN-PZT Nanoceramics (Fall 2012)
- ✧ Advanced Piezoelectric Materials (Fall 2012)
- ✧ KIKUCHI Diffraction (Spring 2012)
- ✧ X-Ray Diffraction Study of Protein Structure (Spring 2012)
- ✧ Cu Nanoparticles: Synthesis, Properties and Applications (Spring 2012)

Selected Publications

- Seyed Yahya Rahnamaee, Reza Bagheri, Manouchehr Vosoughi, **Shahab Ahmadi Seyedkhani**, Ali Samadikouchaksaraei, *Bioinspired Multifunctional TiO₂ hierarchical micro/nanostructures with tunable improved cell growth and inhibited bacteria adhesion*, *Ceramics International* 46 (2020) 9669-9679.
- Zohreh Riyahi, **Shahab Ahmadi Seyedkhani**, S.K. Sadrnezhaad, *Electrophoretic encapsulation for slow release of vancomycin from perpendicular TiO₂ nanotubes grown on Ti6Al4V electrode*, *Mater. Res. Express* 6 (2020) 125424.
- Iman Mohammadi, Abdollah Afshar, **Shahab Ahmadi**, *Al₂O₃/Si₃N₄ nanocomposite coating on aluminum alloy by the anodizing route: Fabrication, characterization, mechanical properties and electrochemical behavior*, *Ceramics International* 42 (2016) 12105-12114. (*This research work has been mentioned on Information Base of the Islamic Revolution Achievements*)
- Iman Mohammadi, **Shahab Ahmadi**, Abdollah Afshar, *Effect of pulse current parameters on the mechanical and corrosion properties of anodized nanoporous aluminum*, *Journal of Materials Chemistry and Physics* 183 (2016) 490-498.
- Iman Mohammadi, Abdollah Afshar, **Shahab Ahmadi**, *Nanoporous anodized aluminum thickness optimization through pulse current mode*, *Journal of Advanced Materials and Processing*, Vol. 3, No. 4, 2015, 11-25.
- Seyed Yahya Rahnamaee, **Shahab Ahmadi Seyedkhani**, S.K. Sadrnezhaad, Aylar Eslami Saed, Ashkan Seza, *Bioinspired multi-layer Nanostructured coatings: Physical and Mechanical improvements using different intermediate films*, (In Progress)

References

Dr. Seyed Khatiboleslam Sadrnezhaad

Full Professor, Department of Materials Science and Engineering & Institute for Nanoscience and Nanotechnology (INST), Sharif University of Technology
 Email address: sadrnezh@sharif.edu, sadrnezh@yahoo.com
 Tel: +98 (021) 66165215 | Fax: +98 (021) 66005717
 Homepage: www.sadrnezhaad.ir

Dr. Mohammad Mahdi Ahadian

Associate Professor, Institute for Nanoscience and Nanotechnology (INST), Sharif University of Technology
 Email address: ahadian@sharif.edu
 Tel: +98 (021) 66164120

Dr. Raheleh Mohammadpour

Associate Professor, Institute for Nanoscience and Nanotechnology (INST), Sharif University of Technology
 Email address: mohammadpour@sharif.edu
 Tel: +98 (021) 66164121

Dr. Shahriar Sharafi

Full Professor, Department of Materials Engineering Shahid Bahonar University of Kerman
 Email address: sh_sharafi@uk.ac.ir
 Tel: +98 (034) 32114053

Dr. Azam Irajizad

Full Professor, Department of physics & Institute for Nanoscience and Nanotechnology (INST), Sharif University of Technology
 Email address: iraji@sharif.edu
 Tel: +98 (021) 66164513

Dr. Manouchehr Vosoughi

Full Professor, Department of Chemical & Petroleum Engineering & Institute for Nanoscience and Nanotechnology (INST), Sharif University of Technology
 Email address: vosoughi@sharif.edu
 Tel: +98 (021) 66164104

As for those who strive in Us, We shall surely guide them in Our ways,
 and Allah is indeed with the virtuous.

The Noble Quran, 69 Al-Ankabut