

## CURRICULUM VITAE

**Date of Revision:** 18 Nov. 2024

**Name:** Elham Asadian

### **Education:**

**B.SC** 2002-2006, Kharazmi University (Teacher Training University), Chemistry Department, Pure Chemistry, Tehran, Iran

**M.SC** 2007-2009, Sharif University of Technology, Chemistry Department, Analytical Chemistry

**Thesis:** “Chemically modified electrodes based on conducting polymers and carbon nanotubes in clinical and pharmaceutical applications”

**Sabbatical** 2014-2015, Visiting scholar at Nanyang Technological University (NTU), Singapore School of Material Science and Engineering (MSE)

**Project:** “Design and fabrication of 3D graphene networks (3DGNs)/metal oxide composites for sensing applications”

**PhD** 2010-2016, Sharif University of Technology , Institute for Nanoscience and Nanotechnology (INST)

**Thesis:** “Synthesis of hybrid graphene nanostructures and their application in design and fabrication of electrochemical sensors for pharmaceutical and biological applications”

### **Career/Academic Appointments:**

**Postdoc:** 2016-2019, Sharif University of Technology, Institute for Nanoscience and Nanotechnology (INST)

**Project:** “Metal-organic frameworks (MOFs) and their applications in electrochemical sensors design and fabrication”

**Assistant Professor:** 2019-2021, Shahid Beheshti University of Medical Sciences (SBMU), School of Medicine, Department of Biomedical Engineering and Medical Physics

2021-Present, Shahid Beheshti University of Medical Sciences (SBMU), School of Advanced Technologies in Medicine, Department of Tissue Engineering and Regenerative Medicine

### **Administrative Positions:**

- **2023-On:** Research Deputy of Medical Nanotechnology and Tissue Engineering Research Center
- **2024-On:** Dean of Technology Education and Promotion, SBMU

## Professional Honors & Recognition:

- Winner of Kazemi Ashtiani Award from the National Elite Foundation, 2019
- Selected in a World-wide Competition as a Young Scientist for Participation in Lindau Nobel Laureate Meeting 2017, 24-30 June, Lindau Germany (The only representer from Iran)
- Winner of Baden-Wurttemberg Program of the Lindau Nobel Laureate Meeting 2017, 1-7 July, Baden-Wurttemberg State, Germany
- Three years postdoctoral scholarship from Iranian Nanotechnology Initiative Council
- 1<sup>st</sup> rank in the PhD entrance exam and first ranked PhD graduated student from INST
- 2<sup>nd</sup> rank in master national entrance exam among 11000 participants, 2007

## Completed Grants:

“*Design and Fabrication of a Self-powered Wearable Biosensor Based on Electrochemical Energy Storage/Conversion Devices*”, National Institute for Medical Research Development (NIMAD), Young Researcher Grant, Technology and Innovation in Medical Sciences, Grant No.: 988828

“*Design and Fabrication of All-Polymeric Self-Powered Electrically Triggered Drug Delivery System based on Triboelectric Nanogenerator*”, Iran National Science Foundation (INSF), Grant No.: 99000065,

## Lectures, Courses, Web-based Educations:

- Shahid Beheshti University of Medical Sciences (SBMU)
  - Synthesis of Nanomaterials
  - Nanobiotechnology/Advanced Nanomedicine
  - Drug delivery systems
  - Applications of Nanotechnology in Tissue Engineering & Cell Therapy
  - Synthesis and Characterization of Scaffolds
- Sharif University of Technology
  - Nanoscience Laboratory for PhD students
  - Analytical Chemistry, Chemical Engineering Department (Undergraduate)

## Bibliography

### Peer-reviewed original research:

- Shahrokhian S, **Asadian E**. Electrochemical determination of l-dopa in the presence of ascorbic acid on the surface of the glassy carbon electrode modified by a bilayer of multi-walled carbon nanotube and polypyrrole doped with tiron. *Journal of Electroanalytical Chemistry*. **2009** Nov 15;636(1-2):40-6.
- Shahrokhian S, **Asadian E**. Simultaneous voltammetric determination of ascorbic acid, acetaminophen and isoniazid using thionine immobilized multi-walled carbon nanotube modified carbon paste electrode. *Electrochimica Acta*. **2010** Jan 1;55(3):666-72 (**Top-cited paper**).

- **Asadian E**, Shahrokhian S, Jokar E. In-situ electro-polymerization of graphene nanoribbon/polyaniline composite film: Application to sensitive electrochemical detection of dobutamine. *Sensors and Actuators B: Chemical*. **2014** Jun 1;196:582-8.
- **Asadian E**, Shahrokhian S. Voltammetric studies of Azathioprine on the surface of graphite electrode modified with graphene nanosheets decorated with Ag nanoparticles. *Materials Science and Engineering: C*. **2016** Jan 1;58:1098-104.
- **Asadian E**, Shahrokhian S, Zad AI. Hierarchical core–shell structure of ZnO nanotube/MnO<sub>2</sub> nanosheet arrays on a 3D graphene network as a high-performance biosensing platform. *RSC advances*. **2016**;6(66):61190-9.
- Shahrokhian S, Mohammadi R, **Asadian E**. One-step fabrication of electrochemically reduced graphene oxide/nickel oxide composite for binder-free supercapacitors. *International Journal of Hydrogen Energy*. **2016** Oct 19;41(39):17496-505.
- Kheirabadi M, Bagheri R, Kabiri K, Ossipov DA, Jokar E, **Asadian E**. Improvement in Mechanical Performance of Anionic Hydrogels Using Full-Interpenetrating Polymer Network Reinforced with Graphene Oxide Nanosheets. *Advances in Polymer Technology*. **2016** Dec;35(4):386-95.
- **Asadian E**, Shahrokhian S, Zad AI, Ghorbani-Bidkorbeh F. Glassy carbon electrode modified with 3D graphene–carbon nanotube network for sensitive electrochemical determination of methotrexate. *Sensors and Actuators B: Chemical*. **2017** Feb 1;239:617-27 (**Top cited & Hot article**).
- **Asadian E**, Shahrokhian S, Zad AI. Highly sensitive nonenzymatic glucose sensing platform based on MOF-derived NiCo LDH nanosheets/graphene nanoribbons composite. *Journal of Electroanalytical Chemistry*. **2018** Jan 1;808:114-23.
- Jokar E, Shahrokhian S, **Asadian E**, Hosseini H. An efficient two-step approach for improvement of graphene aerogel characteristics in preparation of supercapacitor electrodes. *Journal of Energy Storage*. **2018** Jun 1;17:465-73.
- Kheirabadi M, Samadi M, **Asadian E**, Zhou Y, Dong C, Zhang J, Moshfegh AZ. Well-designed Ag/ZnO/3D graphene structure for dye removal: Adsorption, photocatalysis and physical separation capabilities. *Journal of colloid and interface science*. **2019** Mar 1;537:66-78.
- **Asadian E**, Ghalkhani M, Shahrokhian S. Electrochemical sensing based on carbon nanoparticles: A review. *Sensors and Actuators B: Chemical*. **2019** Aug 15;293:183-209.
- **Asadian E**, Shahrokhian S, Zad AI. ZIF-8/PEDOT@ flexible carbon cloth electrode as highly efficient electrocatalyst for oxygen reduction reaction. *International Journal of Hydrogen Energy*. **2020** Jan 13;45(3):1890-900.
- Hosseindokht Z, Mohammadpour R, **Asadian E**, Paryavi M, Rafii-Tabar H, Sasanpour P. Low cost flexible pressure sensor using laser scribed GO/RGO periodic structure for electronic skin applications. *Superlattices and Microstructures*. **2020** Apr 1;140:106470.
- Ejeji F, Mohammadpour R, **Asadian E**, Sasanpour P, Fardindoost S, Akhavan O. Graphene oxide papers in nanogenerators for self-powered humidity sensing by finger tapping. *Scientific reports*. **2020** Apr 30;10(1):7312.
- Naseri A, Hormozi-Nezhad MR, Shahrokhian S, **Asadian E**. Silver nanowires immobilized on gold-modified glassy carbon electrode for electrochemical quantification of atorvastatin. *Journal of Electroanalytical Chemistry*. **2020** Nov 1;876:114540.
- Vafaiee M, Mohammadpour R, Vossoughi M, **Asadian E**, Janahmadi M, Sasanpour P. Carbon nanotube modified microelectrode array for neural interface. *Frontiers in Bioengineering and Biotechnology*. **2021** Jan 13;8:582713.

- Ahmadi M, Ayyoubzadeh SM, Ghorbani-Bidkorbeh F, Shahhosseini S, Dadashzadeh S, **Asadian E**, Mosayebnia M, Siavashy S. An investigation of affecting factors on MOF characteristics for biomedical applications: A systematic review. *Heliyon*. **2021** Apr 1;7(4).
- Ejehi F, Mohammadpour R, **Asadian E**, Fardindoost S, Sasanpour P. Enhancement of self-powered humidity sensing of graphene oxide-based triboelectric nanogenerators by addition of graphene oxide nanoribbons. *Microchimica Acta*. **2021** Aug;188:1-3.
- Rahnamaee SY, Bagheri R, Vossoughi M, **Asadian E**, Seyedkhani SA, Samadikuchaksaraei A. A new approach for simultaneously improved osseointegration and antibacterial activity by electrochemical deposition of graphene nanolayers over titania nanotubes. *Applied Surface Science*. **2022** Apr 1;580:152263.
- Liu Y, Naseri A, Li T, Ostovan A, **Asadian E**, Jia R, Shi L, Huang L, Moshfegh AZ. Shape-controlled photochemical synthesis of noble metal nanocrystals based on reduced graphene oxide. *ACS Applied Materials & Interfaces*. **2022** Apr 4;14(14):16527-37.
- Pouyanfar N, Harofte SZ, Soltani M, Siavashy S, **Asadian E**, Ghorbani-Bidkorbeh F, Keçili R, Hussain CM. Artificial intelligence-based microfluidic platforms for the sensitive detection of environmental pollutants: Recent advances and prospects. *Trends in Environmental Analytical Chemistry*. **2022** Jun 1;34:e00160.
- Nazari-Vanani R, Mohammadpour R, **Asadian E**, Rafii-Tabar H, Sasanpour P. A computational modelling study of excitation of neuronal cells with triboelectric nanogenerators. *Scientific Reports*. **2022** Aug 4;12(1):13411.
- Ejehi F, Shoostari L, Mohammadpour R, **Asadian E**, Sasanpour P. Self-powered ultraviolet/visible photodetector based on graphene-oxide via triboelectric nanogenerators performing by finger tapping. *Nanotechnology*. **2022** Sep 7;33(47):475205.
- Afjeh-Dana E, **Asadian E**, Razzaghi MR, Rafii-Tabar H, Sasanpour P. Deflection-based laser sensing platform for selective and sensitive detection of H<sub>2</sub>S using plasmonic nanostructures. *Scientific Reports*. **2022** Sep 22;12(1):15789.
- Masoudifar R, Pouyanfar N, Liu D, Ahmadi M, Landi B, Akbari M, Moayeri-Jolandan S, Ghorbani-Bidkorbeh F, **Asadian E\***, Shahbazi MA. Surface engineered metal-organic frameworks as active targeting nanomedicines for mono-and multi-therapy. *Applied Materials Today*. **2022** Dec 1;29:101646.
- Huang T, Wang G, Shahbazi MA, Bai Y, Zhang J, Feng G, **Asadian E**, Ghorbani-Bidkorbeh F, Yang Z, Li Y, Huo Q. Surface decoration of peptide nanoparticles enables efficient therapy toward osteoporosis and diabetes. *Advanced Functional Materials*. **2023** Jan;33(2):2210627.
- Afsharara H, **Asadian E**, Mostafiz B, Banan K, Bigdeli SA, Hatamabadi D, Keshavarz A, Hussain CM, Kecili R, Ghorbani-Bidkorbeh F. Molecularly imprinted polymer-modified carbon paste electrodes (MIP-CPE): A review on sensitive electrochemical sensors for pharmaceutical determinations. *TrAC Trends in Analytical Chemistry*. **2023** Mar 1;160:116949.
- Ahmadi M, Khoramjouy M, Dadashzadeh S, **Asadian E**, Mosayebnia M, Geramifar P, Shahhosseini S, Ghorbani-Bidkorbeh F. Pharmacokinetics and biodistribution studies of [99mTc]-Labeled ZIF-8 nanoparticles to pave the way for image-guided drug delivery and theranostics. *Journal of Drug Delivery Science and Technology*. **2023** Mar 1;81:104249.
- Nazari-Vanani R, Vafaiee M, **Asadian E**, Mohammadpour R, Rafii-Tabar H, Sasanpour P. Enhanced proliferation and migration of fibroblast cells by skin-attachable and self-cleaning triboelectric nanogenerator. *Biomaterials Advances*. **2023** Jun 1;149:213364.
- Jannesari M, **Asadian E\***, Ejehi F, English NJ, Mohammadpour R, Sasanpour P. Boosting on-demand antibacterial activity using electrical stimulations from polypyrrole-graphene oxide triboelectric nanogenerator. *Nano Energy*. **2023** Jul 1;112:108463.

- **Asadian E**, Abbaszadeh S, Ghorbani F, Rezaei S, Santos HA, Xiao B, Shahbazi MA. Hijacking Plant Skeletons for Biomedical Applications: From Regenerative Medicine and Drug Delivery to Biosensing. *Biomaterials Science*. **2024**.
- Akhtari N, Ahmadi M, Kiani Doust Vaghe Y, **Asadian E**, Behzad S, Vatanpour H, Ghorbani-Bidkorpheh F. Natural agents as wound-healing promoters. *Inflammopharmacology*. **2024** Feb;32(1):101-25.
- Nazari-Vanani R, Vafaiee M, Zamanpour F, **Asadian E**, Mohammadpour R, Rafii-Tabar H, Sasanpour P. Flexible Triboelectric Nanogenerator for Promoting the Proliferation and Migration of Human Fibroblast Cells. *ACS Applied Materials & Interfaces*. **2024** Mar 25;16(13):15773-82.
- Ejehi F, Vafaiee M, Bavi O, Maymand VM, **Asadian E**, Mohammadpour R. Asymmetric flexible graphene oxide papers for moisture-driven actuators and water level indicators. *Alexandria Engineering Journal*. **2024** Nov 1;107:406-14.
- Pouyanfar N, Farnam G, Ahmadi M, Masoudifar R, Banan K, **Asadian E**, Shahhosseini S, Shahbazi MA, Shirazi FH, Ghorbani-Bidkorpheh F. Synthesis, modification, characterization, and in vitro evaluation of chitosan-hyaluronic acid coated MIL-100 (Fe) nanoparticles for methotrexate delivery in rheumatoid arthritis. *International Journal of Biological Macromolecules*. **2024** Nov 15:137715.
- **Asadian E**, Bahramian F, Siavashy S, Movahedi S, Keçili R, Hussain CM, Ghorbani-Bidkorpheh F. A review on recent advances of AI-integrated microfluidics for analytical and bioanalytical applications. *TrAC Trends in Analytical Chemistry*. **2024** Dec 1;181:118004.

#### Chapters, Books:

- **Asadian E**, Ahmadi M, Keçili R, Ghorbani-Bidkorpheh F. Emerging Metal-Organic Framework Nanomaterials for Cancer Theranostics. *Cancer Nanotheranostics: Volume 1*. **2021**:231-74.
- **Asadian E**, Masoudifar R, Pouyanfar N, Ghorbani-Bidkorpheh F. Nanotechnology-based therapies for skin wound regeneration. In *Emerging nanomaterials and nano-based drug delivery approaches to combat antimicrobial resistance* **2022** Jan 1 (pp. 485-530). Elsevier.
- **Asadian E**, Jannesari M, Shahbazi MA. Application of infrared waves in cancer therapy. In *Electromagnetic Waves-Based Cancer Diagnosis and Therapy* **2023** Jan 1 (pp. 151-237). Academic Press.
- Mostafiz B, Banan K, Bigdeli SA, Soofiani A, Keshavarz A, Afsharara H, Hatamabadi D, Ghalkhani M, **Asadian E**, Ghorbani-Bidkorpheh F, Peltola E. Electrochemical sensors based on green molecularly imprinted polymers. In *Green Imprinted Materials* **2024** Jan 1 (pp. 387-417). Elsevier.