

Mahya Rahmani,

Ph.D., MBA,

Assistant Professor at Shahid Beheshti University of Medical Sciences(SBMU),

Department of Tissue Engineering and Applied Cell Sciences,

School of Advanced Technology in Medicine,

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Research Interests

- Design, fabrication, and characterization of polymeric nanoparticles & nanocomposite scaffolds for drug delivery and tissue engineering applications
- Design and development of cytotoxicity assays, cell isolation, primary & cell line culture

Education

Jun 2022 –August 2022

- **Visiting scholar** at German Federal Institute for Risk Assessment (BfR), Germany
- **Project:** *Engineered Nanomaterials: Novel Approaches for Risk Assessment and Safe-by-Design (NanoRiskSD)*
- **Supervisor:** Prof. Andrea Hasse.

February 2013 – January 2020

Doctor of Philosophy (Ph.D.) (2nd rank among Ph.D. candidates, GPA: 18.96/20)

Major: Medical Nanotechnology

Department of Medical Nanotechnology,

School of Advanced Technologies in Medicine,

Tehran University of Medical Sciences (TUMS), Tehran, Iran.

Thesis Title: *Synthesis, characterization and biocompatibility assay of biomimetic PMS nanofibrous scaffold for dura tissue regeneration,*

Supervisor: Prof. Ghanbari, Prof. Faridi

Thesis Degree: Excellent, GPA:20/20

September 2007 – December 2009

Master of Science (M.Sc.) (*Honor student*, GPA: 18.03/20)

Major: Biomedical Engineering

Department of Biomedical Engineering

Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran.

Thesis Title: *Diagnosis of normal & malignant bone cells by laser-induced fluorescence spectroscopy (LIFS)*

September 2002 – January 2006

Bachelor of Science (B.Sc.)

Major: Materials and Metallurgical Engineering

Department of Materials and Metallurgical Engineering

School of Material Eng. & Advanced Processes,

Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran.

Thesis Title: *Mechanical characterization of Accumulative Roll-Bonding (ARB) process on commercially available pure copper*

Honors and Awards

- Recognized as an **honor researcher** at **Ph.D.** by the Ministry of Health and Medical Education and Exceptional Talent Development Center(ETDC), Tehran University of Medical Sciences (TUMS),
- Recognized as an **honor student** at **Ph.D.** by Exceptional Talent Development Center(ETDC), Tehran University of Medical Sciences (TUMS),
- Recognized as an **honor student** at **MSc** by Exceptional Talent Development Center(ETDC), Amirkabir University of Technology, (Tehran Polytechnic))
- Graduated with honors from the independent higher education program in “*Business Strategic Management in the Area of Healthcare (Healthcare MBA)*” from the Academic Center for Education, Culture and Research, Shahid Beheshti University of Medical Sciences and Tehran University of Medical Sciences, Exceptional Talents Development Center - 200 hours of theoretical and practical instructions, 2019

Patent

- Ghanbari H, **Rahmani M**, Khani M, (2020), Nanofibrous structure based on poly mannitol sebacate for biomedical and tissue engineering applications, Iranian Patent No.100551

Book Chapter

- Compilation of a book entitled “Biocompatibility in Nanoscale”, (2016), Taali Andishe, ISSN:978-600-94550-9-6

Research Grant

- (2017 & 2018). **Basir Clinic**, Eye Hospital Health Research Center.

Publication in Peer-reviewed Journal

- Boroumand, Safieh, Elham Hamedi, Faraz Sigaroodi, **Mahya Rahmani**, Hamed Ghassemi, Maryam Mahmoodinia Maymand, and Mohammad-Mehdi Khani. "Biological Materials Introduced to the Market for Blurred Cornea Regeneration." *Regenerative Engineering and Translational Medicine* (2023): 1-17.
- Farzamfar, Saeed, Megan Richer, **Mahya Rahmani**, Mohammad Naji, Mehdi Aleahmad, Stéphane Chabaud, and Stéphane Bolduc. "Biological Macromolecule-Based Scaffolds for Urethra Reconstruction." *Biomolecules* 13, no. 8 (2023): 1167.
- Lashkari, Mahla, **Mahya Rahmani**, Yaser Yousefpour, Meysam Ahmadi-Zeidabadi, Reza Faridi-Majidi, Zahra Ameri, Moein Salary et al. "Cell-based wound dressing: Bilayered PCL/gelatin nanofibers-alginate/collagen hydrogel scaffold loaded with mesenchymal stem cells." *International Journal of Biological Macromolecules* 239 (2023): 124099.
- Sigaroodi, Faraz, **Mahya Rahmani**, Azim Parandakh, Safieh Boroumand, Shahram Rabbani, and Mohammad-Mehdi Khani. "Designing cardiac patches for myocardial regeneration—a review." *International Journal of Polymeric Materials and Polymeric Biomaterials* (2023): 1-19.
- Tabatabaei, Seyed Nasrollah, Raheleh Faridi-Majidi, Safieh Boroumand, Faezeh Norouz, **Mahya Rahmani**, Fatemeh Rezaie, Farzaneh Fayazbakhsh, and Reza Faridi-Majidi. "Nanofibers in respiratory masks: an alternative to prevent pathogen transmission." *IEEE Transactions on NanoBioscience* (2022).
- Rekabgardan, Mahmood, Azim Parandakh, Shayan Shahriari, Zeinab Khazaei Koochpar, **Mahya Rahmani**, Camelia Ganjouri, Reza Ramezani Sarbandi, and Mohammad-Mehdi Khani. "An electrospun PGS/PU fibrous scaffold to support and promote endothelial differentiation of mesenchymal stem cells under dynamic culture condition." *Journal of Drug Delivery Science and Technology* (2022): 103383.
- Rekabgardan, Mahmood, **Mahya Rahmani**, M. Soleimani, Simzar Hossein Zadeh, R. Roozafzoon, Azim Parandakh and M. Khani. "A Bilayered, Electrospun Poly(Glycerol-Sebacate)/Polyurethane- Polyurethane Scaffold for Engineering of Endothelial Basement Membrane." *ASAIO journal* (2021)
- Ghanbariasad, Ali, Fatemeh Amoozegar, **Mahya Rahmani**, Elham Zarenezhad, and Mahmoud Osanloo. "Impregnated nanofibrous mat with nanogel of citrus Sinensis essential oil as a new type of dressing in cutaneous leishmaniasis." *Biointerface Research in Applied Chemistry* 11, no. 4 (2021): 11066-11076.
- **Mahya Rahmani**, Mohammad-Mehdi Khani, Shahram Rabbani, Alireza Mashaghi, Farsad Noorzadeh, Reza Faridi-Majidi, and Hossein Ghanbari. "Development of poly (mannitol sebacate)/poly (lactic acid) nanofibrous scaffolds with potential applications in tissue

engineering." *Materials Science and Engineering: C* (2020): 110626.

- **Mahya Rahmani**, Reza Faridi-Majidi, Mohammad-Mehdi Khani, Alireza Mashaghi, Farsad Noorzadeh, and Hossein Ghanbari. "Cross-linked PMS/PLA Nanofibers with Tunable Mechanical Properties and Degradation Rate for Biomedical Applications." *European Polymer Journal* (2020): 109633.
- Osanloo Mahmoud, Mohammad Mehdi Sedaghat, Hassan Sereshti, **Mahya Rahmani**, Farzaneh Saeedi Landi, and Amir Amani. "Chitosan nanocapsules of tarragon essential oil with low cytotoxicity and long-lasting activity as a green nano-larvicide." *Journal of Nanostructures* 9, no. 4 (2019): 723-735.
- **Mahya Rahmani**, Sepideh Arbabi Bidgoli, and Seyed Mahdi Rezayat. "Electrospun polymeric nanofibers for transdermal drug delivery." *Nanomedicine Journal* 4, no. 2 (2017): 61-70.
- **Mahya Rahmani**, Mohammad Mehdi Khani, Zeinab Khazaei Koozpar, and Paria Molik. "Discrimination and quantification of autofluorescence spectra of human lung cells." *Laser Physics* 26, no. 10 (2016): 105604.
- Khosroshahi, Mohamad E., and **Mahya Rahmani**. "Detection and evaluation of normal and malignant cells using laser-induced fluorescence spectroscopy." *Journal of fluorescence* 22, no. 1 (2012): 281-288.

Conferences

- **Mahya Rahmani**, Nanotechnology approaches in cornea regeneration: future perspective in ophthalmology, The 10th annual meeting of the Iranian research association for Vision and Ophthalmology (**IRAVO 2021**), Tehran, Iran
- **Mahya Rahmani**, Hossein Ghanbari, *Development of poly (mannitol sebacate)/poly(lactic acid) nanofibrous scaffold with potential applications in tissue engineering*, 2nd Conference on nanofibers 2019 (**ICNF 2019**), Tehran, Iran
- **Mahya Rahmani**, Hossein Ghanbari, *Development of novel hydrogel-based cornea substitute for keratoconus*, NanoMed festival (**NanoMed2019**), Tehran, Iran
- **Mahya Rahmani**, Hossein Ghanbari, *Fabrication of novel PMS:PLA nanofibrous scaffolds with improved mechanical properties for soft tissue engineering applications*, 2nd Nanomedicine and Nanosafety international conference (**2nd NMNS 2017**), Tehran, Iran
- **Mahya Rahmani**, Hossein Ghanbari, *Nanomaterials within the blood, hemocompatibility concerns*, The Asian Nano Forum Congress (**ANFC2015**), Kish Island, Iran

Workshop instructor at Conference

- **“Nanomaterials within the blood, hemocompatibility concerns”**, The Asian Nano Forum Congress (**ANFC2015**), Kish Island, Iran
- **“Basics of cell seeding on electrospun scaffolds”**, 1st Conference on nanofibers **2017 (ICNF 2017)**, Tehran, Iran

Teaching Experience

- **Ph.D.**, at the **Department of Medical Nanotechnology**, Shahid Beheshti University of Medical Sciences (SBMU), Tehran, Iran
- **Ph.D. & MSC**, at the **Department of Medical Nanotechnology and International Campus**, Tehran University of Medical Sciences (TUMS), Tehran, Iran
*Courses taught in Persian and English languages
- Teaching theoretical and practical sessions on:
 - **“Safety of nanotechnology”** 2020-present
 - **“Nanomedicine & Biocompatibility at the Nanoscale”** 2017
 - **“Fabrication of nanoscale scaffold”**, 2017-present
 - **“Hemocompatibility”**, 2017-present
 - **“Biocompatibility assays”**, 2015-present
 - **“Cytotoxicity assays”** 2015-present
 - **“Cell culture methods- Basic & advance”**, 2015-present
 - **“2D and 3D cell culture methods”**. 2015-present

Workshops Instructor

- **“Cell culture methods-Basic”**, Exceptional Talent Development Center(ETDC), Tehran University of Medical Sciences (TUMS). (**September 2022**)
- **“Cell culture methods-Advance”**, Exceptional Talent Development Center(ETDC), Tehran University of Medical Sciences (TUMS). (**September 2022**)
- **“Principle of cytotoxicity assays ”**, Exceptional Talent Development Center(ETDC), Tehran University of Medical Sciences (TUMS). (**September 2022**)
- **“Cell culture methods-Basic”**, Exceptional Talent Development Center(ETDC), Tehran University of Medical Sciences (TUMS). (**April 2022**)
- **Cell culture methods-Advance”**, Exceptional Talent Development Center(ETDC), Tehran

University of Medical Sciences (TUMS). (**April 2022**)

- **“Principle of cytotoxicity assays”**, Exceptional Talent Development Center(ETDC), Tehran University of Medical Sciences (TUMS). (**April 2022**)
- **“2D & 3D cell culture methods”**, Lab core facility, Tehran University of medical sciences (TUMS). (**April 2017**)

Skills & Expertise

- Polymer *Synthesis and Modification*:
 - Poly polyol sebacate (PGS, PMS, PSS...)
 - Gelatin methacryloyl (GelMA) and methacrylated hyaluronic acid (MeHA) and chitosan
- Fabrication of nanoscale fibrous, porous scaffold and nanoparticles
 - Electrospinning process of synthetic and natural polymers (PMS, PGS, PLA, PCL, PGS, PU Gelatin, collagen, Alginate, Chitosan...) with/without loaded biomolecules
 - Porous scaffold manufacturing and fabrication (Solvent casting and particle leaching, Freeze-drying...)
 - Polymeric nanoparticles (Chitosan, Alginate, PEI)
- Characterization methods
 - (H-NMR, FTIR, DLS, SEM, TEM, Tensile test,)
- Cell culture studies
 - 2D & 3D cultures, Primary cells isolation, Adipose Stem cells Isolation.
 - Cytotoxicity assays for 2D and 3D culture (MTT assay, LDH assay, Neutral red assay, XTT assay, WST-1, Resazurin, ...)
 - Live-dead assays
 - Fluorescence staining (Dapi, Phalloidin, Hoechst, ...)
 - Preparing of cell-cultured sample for study under light and Electron Microscope (SEM, TEM)
- Immunology
 - Immunocytochemistry
 - Flowcytometry (preparing samples)
- Microscopic assay
 - Working with Stereo Microscope, Fluorescence Microscope and Light Microscope, Type of nuclear staining (Dapi, Pi, Hoechst, ...)
- Histological Technical (preparing samples)
 - H&E staining
 - Masson's Trichrome staining

- Animal model) with the assistance of a veterinarian(
 - Subcutaneous implant model in rat
 - Keratoconus model in rabbit
- Working with optical sources and lasers
 - Ar, Kr, CO₂, Nd:Yag lasers

Academic Activities

- Member and Reviewer of the Research Council of the Scientific Research Center for Students, Tehran University of Medical Sciences (TUMS)
- The executive member of holding the 2nd Nanomedicine and Nanosafety international conference (2nd NMNS 2017), Tehran, Iran
- The executive member of f the organizing committee of the 1st International Iran NanoSafety Congress (INSC), Tehran, February 2014
- The executive member of f the organizing committee of the 14th Nanotechnology Iranian Student Conference, May 2013
- The executive member of f the organizing committee of the 13th Nanotechnology Iranian Student Conference, May 2012
- The executive member of f the organizing committee of the 1st Nanosafety Congress, May 2013
- Educational deputy of research nanomedicine association of UCERN, 2016 to present
- Contributing to a local charity center (non-governmental), 2015 to date