1. *Personal Details*

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Sabanci University Integrated Manufacturing Technologies Research and Application Centre (SU-IMC), Istanbul, Turkey.
DOB: March 14, 1990.
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Date of the CV: November 10, 2024.

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2. *Professional Experience*

Postdoctoral researcher – *August 2023- Present*
Sabanci University Integrated Manufacturing Technologies Research and Application Centre (SU-IMC), Istanbul, Turkey.

Main projects:

- "*Improving Thermal and Electrical Properties of High-Performance Thermoplastics and Lightweight Composites*", *August 2023- Present*.

Supporting Projects:

- "*Capturing CO_2 Using Hollow Activated Carbon Nanofibrous Membranes and Converting It into Sustainable Graphene*", *November 2023- June 2024*,
- "*Graphene reinforced Shape Memory TPU Composites Manufacturing*", *May 2024- October 2024*.

Postdoctoral researcher – *November 2021 – August 2023*
Sabanci University Nanotechnology Research and Application Centre (SUNUM), Istanbul, Turkey.

Main projects:

- "*3D Architectural Carbon-Based Hybrid Structure for Interfacial Photothermal Vaporization: Water Purification and Desalination Applications*", **TUBITAK funded project**, *November 2021- August 2023*.

Supporting Projects:

- "*Nanofibrous Membrane Modified by Graphene-Based Materials for Advanced Drinking Water Treatment*", **Sabanci University Integrated Manufacturing Technologies Research and Application Centre (SU-IMC),** and **FLAG-ERA** (Graphene Flagship – GO for Water), *2021- 2024*,
- "*Improving Proton Exchanging and Mechanical Properties of Carbon Fabric based Membrane by using Polymeric Nanostructures*", with the participation of **Sabanci University Integrated Manufacturing Technologies Research and Application Centre (SU-IMC)**, *2022-2023*.

Team leader – *2019-2021*
Advanced Textile Materials and Technology Institute, Tehran, Iran.

- Team leader in **Functional Fibrous Materials Lab (FFM)**, *2019-2021*.

Researcher (PI) – *2018-2020*
Faculty of Textile Engineering, Amirkabir University of Technology, Tehran, Iran.

"*Developing Flexible Sensors and Actuators by Using Printed Electronic Devices Technology on Smart Textiles*", Funding agency: **Iran Nanotechnology Innovation Council**, and **Iranian Printed Electronic Centre**, *2018-2020*.

Visiting researcher – *December 2017- July 2018*
Faculty of Civil and Industrial Engineering, University of Pisa, Pisa, Italy, under the supervision of Dr. Serena Danti.

- Study on **Flexible** and **Implantable** Hybrid Piezoelectric Nanogenerator Devices based on **ZnO Nanorod/PVDF Nanofibers**,
- Developing Nanocomposite Piezoelectric Materials for **Cochlear Sensory-Neural Stimulation** (*NANOSPARKS*), **MIT-UNIPI**.

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3. Technical Skills

- Extensive hands-on experience with **Electrospinning** and **Electrospraying**,
- Expert in **Nanostructures** fabrication, **Characterization,** and **Chemical functionalization**,
- Proficient in **Solution processing** and **Polymeric membrane fabrication**,
- Conversant with carbon-based nano materials such as GO, rGO, GNP, TEGO and CNT,
- Familiar with **multiphysics phenomena**, particularly **piezoelectric**, **triboelectric**, and **photothermal** effects,
- Proven experience in **Material analysis** and **Performance characterization**, such as optical microscopy, RAMAN, FTIR, DSC, Tensile Instron, DMA, AFM and **specially trained for SEM, Micro CT, and High performance XRD**,
- Familiar with **LCA analysis** and **SimaPro** software,
- Computer Skills:
  - Simulation: **COMSOL**,
  - Statistical: **SPSS** & **Origin**,
  - Programming: **MATLAB**.
- Familiar with **Modelling** and **Simulation,** particularly for fibrous and soft materials,
- Demonstrated ability to generate new ideas, concepts, models, and solutions,
- Expert in project management and teamwork.

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4. Other Research Experience

Research supervisor
Faculty of Textile Engineering, Amirkabir University of Technology, Tehran, Iran.

- M.Sc. Research Advisor, "*Analysis of Piezoelectric Properties in Electrospun PVDF Nanofibrous Layers Using COMSOL*", ***2020***,
- B.Sc. Research Advisor, "*Investigation of Non-Piezo Layer Performance on Flexible Piezoelectric Energy Harvesters*", ***2018***,
- B.Sc. Research Advisor, "*The Effect of Dynamic Load Frequency on PVDF Fibrous Energy Harvester Performance*", ***2016***,
- B.Sc. Research Advisor, "*Evaluation of the Effects of Yarn Interfaces on the Moisture Management Properties of Knitted Fabrics*", ***2015.***

Research assistant
Faculty of Textile Engineering, Amirkabir University of Technology, Tehran, Iran.

- Involving in the "*Feasibility Study of Using PVDF Nanofiber Mats as Cardiac Patches*" project, with the participation of **Sharif University of Technology**, *2020-2021*,
- Collaboration in "*Wearable Polymer-Based Sensors for Healthcare Applications*", with the Institute of Advanced Textile Materials and Technology participation, *2018-2019*,
- Working on "*Electrospun Piezoelectric Scaffolds for Lung Tissue Engineering*", with the participation of the **University of Pisa** under the supervision of Dr. Serena Danti, *2017-2019,*
- Working on the "*Flexible and **Nanofibrous-Based Integrated Piezo-Triboelectric Panel**, Mountable on Breakwaters for Electrical Energy Generation*" project and industrialization of achievements, with the participation of Advanced Textile Materials and Technology Institute, *2014-2017*,
- Conducting research on the "*Traffic-Road Panel based on **Piezo-Triboelectric Nanofibers***" project, with the participation of Advanced Textile Materials and Technology Institute, *2014-2016*,
- Working on "*Electrospun Mats with **pH Sensitivity for Wound Healing** Monitoring*" student project, *2014*.

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5. Teaching Merits

- Lecturer of **Nanoscience and Nanotechnology** course - Summer School – Sabanci University, Istanbul, Turkey, *Summer 2024*,
- Lecturer of **Laboratory of Electrical and Electronic Fundamentals -** Faculty of Textile Engineering, Amirkabir University of Technology, Tehran, Iran, *2014-2017* and *2018-2021,*
- Lecturer of **Knitting** Workshop **-** Faculty of Textile Engineering, Amirkabir University of Technology, Tehran, Iran, *2016-2017*.

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6. *Awards and Honors*

- Invention approval by the **Iranian Research Organization for Science and Technology** for "*Flexible and Nanofibrous-Based Integrated Piezo-Triboelectric Panel, Mountable on Breakwaters for Electrical Energy Generation*" **–** *2018,*
- **Gold medal** award from International Invention Innovation Competition for invention and innovation of "*Flexible and Nanofibrous-Based Integrated Piezo-Triboelectric Panel, Mountable on Breakwaters for Electrical Energy Generation*", **Canada –** *2017,*
- Honored for "*Design and Produce of Leno Weaving Mechanism*" in the **Italian Textile Technology Award –** *2017,*
- **Silver medal award** from Bangkok International Intellectual Property, Invention, Innovation, and Technology Exposition, in recognition of creative efforts to invent "*Traffic-Road Panel based on Piezo-Triboelectric Nanofibers*", **Thailand –** *2017.*

7. *Academic Degrees*

Ph.D. *(2014 – 2020)***,** Textile Engineering. Amirkabir University of Technology (Tehran Polytechnic)*, Iran. **GPA**: 17.3/20 (Equal to 3.64/4). **Visiting Research** at the Civil and Industrial Engineering Department, University of Pisa, Pisa, Italy.	**Thesis Topic:** *Empirical and Theoretical Analysis of Electric Energy Harvesting Performance from Polyvinylidene Fluoride Nanofibrous Layers*. • **Modeling** of The Nanofibrous Layer, • Designing and Fabrication of a **Piezo Evolution System**, • Experimental Study of **Piezoelectric Harvesters' Lifetime**.
M.Sc. *(2012 – 2014),* Textile Engineering. Amirkabir University of Technology (Tehran Polytechnic)*, Iran. **GPA**: 18.28/20 (Equal to 3.77/4).	**Thesis Topic:** *Comparison of Piezoelectric Properties of PVDF and PVDF/ZnO (Nanoparticles) Electrospun Fibrous Webs*. • Fabrication of **Nanocomposite Nanofibers**, • Optimizing **Flexible Nanogenerators'** Electrical Output.
B.Sc. *(2008 – 2012)***,** Textile Engineering. Amirkabir University of Technology (Tehran Polytechnic)*, Iran. **GPA**: 15.79/20 (Equal to 3.36/4).	**Thesis Topic:** *Design and Fabrication of Knitting Fabrics by Electronic Knitting Machine*. • Design and Fabrication of Fashionable Knitted Fabrics, • Pattern Programming with M1 (The Stoll pattern software).

* No. 350, Hafez Ave, Valiasr Square, Tehran, Iran 1591634311, intrel@aut.ac.ir, +98 (21) 64540.

8. *Research Interests*

- Optimization and Customization of Advanced Membrane Systems,
- Fabrication and Characterization of Nanostructured Materials,
- Electrospinning and High-Performance Functional Fibrous Materials,
- Design and Fabrication of Polymer-Based Porous Membranes,
- Development of Integrated Systems for Environmental Sustainability,
- Application-Driven Innovation and Translation of Research into Market-Ready Solutions,
- Interdisciplinary Approaches to Scientific Challenges and Phenomena.

9. Language Skills

Native language: Persian.

Other language skills: English, Professional working proficiency.

10. Research output

Journal Articles

- **(Pre submission phase).** *Optimizing Electrical Conductivity of PEEK Polymer with Graphene-Based Materials and Assessing Joule Heating Characteristics,*
- **(Pre submission phase).** *Feasibility Study on Upscaling Upcycled Graphene Integrated Fiber-based Photothermal Hybrid Nanocomposites for Solar Driven Interfacial Water Evaporation,*
- ✓ **(At the submission step).** *Investigation of Ion Conductivity and Mechanical Characteristics of Synthesized Sulfonated PEEK Membrane for Power Composite,*
- ✓ **(At the submission step).** *Development of Anisotropic Nanofibrous Hybrid Membranes Coated with Upcycled Graphene for Enhanced Adsorption of Emerging Contaminants from drinking water,*
- ✓ **(At the submission step).** *Innovative Upcycled Graphene Nanoplate for Water Treatment Application,*
- ✓ **(At the submission stage).** *Theoretical analysis of electrical energy harvesting performance from polyvinylidene fluoride fibrous layers,*
- ✓ **(Submitted to Composites A- JCOMA-24-2538).** Mehdipour, M., Doğan, S., Al-Nadhari, A., Sorayani Bafqi, M. S., Beylergil, B., Saner Okan, B., & Yildiz, M., "*Influence of Functionalized h-BN Particle Interphase and Interface Regulation with Structural Design on the Directional Thermal Conductivity and Mechanical Performance of Carbon Fiber/Epoxy Composites*",
- ✓ **(Submitted to Journal of Power Sources- POWER-D-24-03721).** Ranjbar Aghjehkohal, A., Çakmak Cebeci, F., **Sorayani Bafqi, M. S.,** Taghizadeh Tabrizi, A., Poudeh, L. H., Bakhtiari, R., & Zirhli, O., "*Investigation of Ionic Conductivity and Mechanical Characteristics of Synthesized Sulfonated PEEK Separators for Power Composites*",

1. Gorgolis, G., Tunioli, F., Paterakis, G., Melucci, M., koutroumanis, N., Sygellou, L., **Sorayani Bafqi, M. S.**, Saner Okan, B., & Galiotis, C., (**2024**). "*Enhanced removal of emerging contaminants from tap water by developing graphene oxide and nanoplatelet hybrid aerogels*", RSC Adv., 2024, 14, 34504-34514,
2. **Sorayani Bafqi, M.S.,** Aliyeva, N., Baskan Bayrak, H., Dogan, S., & Saner Okan, B. (**2024**). "*Turning CO_2 into Sustainable Graphene: A Comprehensive Review of Recent Synthesis Techniques and Developments*", Nano Futures, 8, 022002,

3. Karimzadehkhoei, J., **Sorayani Bafqi, M.S. (equal contribution with first author)**, Dericiler, K., Doustdar, O., Okan, B. S., Kosar, A., & Sadaghiani, A. (**2024**). "*Upcycled Graphene Nanoplatelets Integrated Fiber-based Janus Membranes for Enhanced Solar-driven Interfacial Steam Generation*". RSC Applied Interfaces, 1, 896-907,
4. Azimi, B., Labardi, M., **Sorayani Bafqi, M.S.,** Macchi, T., Ricci, C., Carnicelli, V., ... & Danti, S. (**2024**). "*Remnant polarization and structural arrangement in P (VDF-TrFE) electrospun fiber meshes affect osteogenic differentiation of human mesenchymal stromal cells*". Materials & Design, 241, 112973,
5. *Khoei, J. K.,* **Sorayani Bafqi, M.S. (equal contribution with first author)**, *Saeidiharzand, S., Mohammadilooey, M., Hezarkhani, M., Okan, B. S., & Sadaghiani, A. K.* (**2023**). "*Upcycled graphene integrated fiber-based photothermal hybrid nanocomposites for solar-driven interfacial water evaporation*". Desalination, 562, 116707,
6. Tunioli, F., Khaliha, S., Mantovani, S., Bianchi, A., Kovtun, A., Xia, Z., **Sorayani Bafqi, M.S.**, Okan, B.S., Marforio, T.D., Calvaresi, M. and Palermo, V. & Melucci, M. (**2023**). "*Adsorption of emerging contaminants by graphene related materials and their alginate composite hydrogels*". Journal of Environmental Chemical Engineering, 109566,
7. Kabir, H., Kamali Dehghan, H., Mashayekhan, S., Bagherzadeh, R. & **Sorayani Bafqi, M.S**., (**2022**). "*Hybrid fibrous (PVDF-BaTiO3)/PA-11 piezoelectric patch as an energy harvester for pacemakers*". Journal of Industrial Textiles, p.15280837211057575,
8. Yahyapour, R., **Sorayani Bafqi, M.S**., Latifi, M. & Bagherzadeh, R., (**2022**). "*Hybrid multilayered piezoelectric energy harvesters with non-piezoelectric layers*". Journal of Materials Science: Materials in Electronics, 33(4), pp.1783-1797,
9. Azimi, B., **Sorayani Bafqi, M.S.**, Fusco, A., Ricci, C., Gallone, G., Bagherzadeh, R., Donnarumma, G., Uddin, M.J., Latifi, M., Lazzeri, A. & Danti, S., (**2020**). "*Electrospun ZnO/Poly (Vinylidene Fluoride-Trifluoroethylene) Scaffolds for Lung Tissue Engineering*". Tissue Engineering Part A,
10. Danti, S., Azimi, B., Candito, M., Fusco, A., **Sorayani Bafqi, M. S.**, Ricci, C., Milazzo, M., Cristallini, C., Latifi, M., Donnarumma, G., Bruschini, L., Lazzeri, A., Astolfi, L., & Berrettini, S., (**2020**). "*Lithium Niobate Nanoparticles as Biofunctional Interface Material for Inner Ear Devices*". Biointerphases, 15(3), 031004,
11. **Sorayani Bafqi, M. S.**, Latifi, M., Sadeghi, A. H., & Bagherzadeh, R. (**2020**). "*Expected Lifetime of Fibrous Nanogenerator Exposed to Cyclic Compressive Pressure*". Journal of Industrial Textiles, 1528083720915835,
12. **Sorayani Bafqi, M. S.**, Sadeghi, A. H., Latifi, M., & Bagherzadeh, R. (**2019**). "*Design and Fabrication of a Piezoelectric Output Evaluation System for*

Sensitivity Measurements of Fibrous Sensors and Actuators". Journal of Industrial Textiles, 1528083719867443,

13. **Sorayani Bafqi, M. S.**, Bagherzadeh, R., & Latifi, M. (**2016**). "*Nanofiber Alignment Tuning: an Engineering Design Tool in Fabricating Wearable Power Harvesting Devices*". Journal of Industrial Textiles, 47(4), 535-550,
14. Zandesh, G., Gheibi, A., **Sorayani Bafqi, M. S**., Bagherzadeh, R., Ghoorchian, M., & Latifi, M. (2016). "*Piezoelectric Electrospun Nanofibrous Energy Harvesting Devices: Influence of The Electrodes Position and Finite Variation of Dimensions*". Journal of Industrial Textiles, 47(3), 348-362,
15. **Sorayani Bafqi, M. S.**, Bagherzadeh, R., & Latifi, M. (**2015**). "*Fabrication of Composite PVDF-ZnO Nanofiber Mats by Electrospinning for Energy Scavenging Application with Enhanced Efficiency*". Journal of Polymer Research, 22(7), 130,
16. Golmohammadi Rostami, S., **Sorayani Bafqi, M. S.**, Bagherzadeh, R., Latifi, M., & Gorji, M. (**2015**). "*Multi-Layer Electrospun Nanofiber Mats with Chemical Agent Sensor Function*". Journal of Industrial Textiles, 45(3), 467-480.

Conferences

1. Karimzadekhoei, J., **Sorayani Bafqi, M. S.**, Saner Okan, B., Koşar, A., & Sadaghiani, A. K., "*Bilayered Photothermal Membranes for Enhanced Interfacial Solar-Driven Seawater Distillation*", The Second International Conference on Nature Inspired Surface Engineering (NISE 2022), ***2022***,
2. Yahyapour, R., **Sorayani Bafqi, M. S.**, Latifi, M., & Bagherzadeh, R., "*Evaluation of the Performance of Non-Piezo Layers on Flexible Piezoelectric Harvesters*", 12th Textile Science and Economy, ***2019***,
3. Danti, S., Azimi, B., **Sorayani Bafqi, M. S.**, Latifi, M., & Lazzeri, A., "*Zno-Loaded Piezoelectric Fiber Meshes for Tissue Engineering Applications*", Europolymer Conference (EUOPOC 2019), ***2019***,
4. Azimi, B., **Sorayani Bafqi, M. S.**, Uddin, J., Trombi, L., D'Alessandro, D., Danti, S., & Lazzeri, A., "*Development of Piezoelectric Ultrafine Fibers for Bone Stimulation*", 4th International Conference on Bio-Based Polymers and Composites, Balatonfüred, Hungary, ***2018***,
5. **Sorayani Bafqi, M. S.**, Bagherzadeh, R., & Latifi, M. "*Effect of Alignment on Flexible Nanofiber Piezoelectric Properties*", 10th National textile engineering conference, Isfahan, Iran, 26-29 April ***2016***,
6. **Sorayani Bafqi, M. S.**, Bagherzadeh, R., & Latifi, M. "*Comparison of Piezoelectric Property of PVDF and PVDF/ZnO (Nanoparticles) Electrospun Fibrous Webs*", 9th National textile engineering conference, Tehran, Iran, 6-8 May ***2014***,
7. **Sorayani Bafqi, M. S.**, Bagherzadeh, R., & Latifi, M. "*Nanofibrous Structures as a Smart Sensor for Toxic Agents Detection Application*", the 12th Asian Textile Conference, ***2013.***

Book Chapters

1. **Sorayani Bafqi, M. S.,** Birgun, N. and Saner Okan, B., "Design and Manufacturing of High-Performance and High-Temperature Thermoplastic Composite for Aerospace Applications." In Handbook of Nanofillers, pp. 1-48. Singapore: Springer Nature Singapore, **2024**,
2. Baskan-Bayrak, H., Aliyeva, N., **Sorayani Bafqi, M. S.,** & Saner Okan, B., "*Classification of waste plastics for dimension-controlled graphene growth on natural mineral substrates in terms of polymer processing and thermal techniques.*" In Graphene Extraction from Waste, pp. 117-149. Woodhead Publishing, **2023,**
3. Bagherzadeh, R., **Sorayani Bafqi, M. S.,** Shemshaki, N. S., Khomarloo, N., "*Advanced Fibrous Materials for Wearable Energy Harvesting applications*." In Engineered Polymeric Fibrous Materials, Woodhead Publishing, 93-109. **2021**,
4. Bagherzadeh, R., **Sorayani Bafqi, M. S.,** Shemshaki, N. S., Moarref, Z., Ghasemi-Nezhad, S., Maleki, F., & Fakhri, P., "*Flexible and Stretchable Nanofibrous Piezo-and Triboelectric Wearable Electronics*." In Energy Harvesting Properties of Electrospun Nanofibers, Chapter 7, IOP Publishing, **2019**,
5. Bagherzadeh, R., M. Gorji, **Sorayani Bafqi, M. S.**, and N. Saveh-Shemshaki. "*Electrospun Conductive Nanofibers for Electronics*." In Electrospun Nanofibers, pp. 467-519. Woodhead Publishing, **2017**.

Patents

1. *Flexible Integrated Piezo-Triboelectric Panel Mounted on Breakwaters for Electrical Energy Generation*, **IR Patent No. 92399**,
2. *Traffic-Road Panel based on Piezo-Triboelectric Fibers*, **IR Patent No. 89880**,
3. *Nanofibrous Structures as a Smart Sensor for Toxic Agents Detection*, **IR Patent No. 83362**,
4. *Nanocomposite Fibrous Energy Harvester usable in Wearable Microelectronic Devices*, **IR Patent No. 81238**.