Mehdi Ghaffari

Updated on February 2025

Curriculum Vitae

Experienced academic and innovation leader with a PhD in Polymer Engineering and over two decades of expertise across academia, R&D, and the startup ecosystem. *Proven track record in teaching, research, and academic leadership, with national recognition, high-impact publications, and successful mentoring of graduate students. As a Professor of Polymer Engineering, I have built and directed innovation systems, fostered corporate partnerships, accelerated technology-based ventures, and aligned corporate strategies with entrepreneurial ecosystems. My expertise spans polymer science, biomaterials, nanocomposites, surface-interface, and coatings, complemented by leading R&D initiatives in novel polymer formulations, quality control, and cost-effective manufacturing. This blend of academic rigor, industry leadership, and venture-facing experience uniquely positions me to bridge corporate strategy with innovation.*

RESEARCH INTERESTS

- Polymeric based drug delivery systems
- Nanocompoites
- Bioadhesives
- Metal-organic frameworks (MOFs)

Date of Birth: *1978*
Nationality: *Iranian*
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Google Scholar: https://scholar.google.com/citations?user=2dq57qIAAAAJ&hl=eni

EDUCATIONs

Ph.D., Polymer Engineering

2007-2012 Iran Polymer and Petrochemical Institute (www.ippi.ac.ir) Tehran, Iran

Thesis: Epoxy/Polyaminoamide/Glassflake Nanocomposite Systems: Study the Curing Kinetics, Rheology, Protective Performance, and Effect of Surface Chemical Treatment of Carbon Steel on the interface.

Supervisor: Prof. Morteza Ehsani, Prof. Hossein Ali Khonakdar

- **M.Sc., Chemical Engineering**

2000-2003 University of Tehran (www.ut.ac.ir) Tehran, Iran

Thesis: Mechanical and Thermal Properties of Electron Beam Irradiated Crosslinked Polyethylene Foam.

Supervisor: Prof. Iraj Rezaian.

- **B.Sc., Polymer Engineering**

1996-2000 Amir Kabir University of Technology (Tehran Polytechnic) (www.aut.ac.ir) Tehran, Iran

Thesis: Semi-Conductive Polymers.

Supervisor: Prof. Vahid Haddadi Asl

Note:

✓ Iran Polymer and Petrochemical Institute (IPPI) is the biggest and most applied institute in the field of polymer science and technology in the Middle East.

✓ The University of Tehran is the oldest and most prominent Iranian university located in Tehran, Iran.

✓ Amir Kabir University of Technology (Tehran Polytechnic) is the first, largest, and highly prestigious university of technology in Iran.

WORK EXPERIENCE

- **Member of Academic Staff: Associate Professor (2020-Present) and Assistant Professor (2013-2020)**

2013 – Present **Golestan University-GU (www.gu.ac.ir)** **Gorgan, Iran**

Appointed as a faculty member in the polymer engineering department at Golestan University with research, supervision, and teaching tasks.

- Delivering undergraduate and graduate-level courses
- Leading independent and collaborative research projects with publications in peer-reviewed journals
- Supervising and mentoring undergraduate and graduate students
- Serving on academic and administrative university committees
- Publishing peer-reviewed journal articles

- **Research and Development (R&D) Senior Manager (Part-Time)**

2025 – Present **Golsam Gorgan Chemicals (www.golsamco.com)** **Gorgan, Iran**

Golsam Gorgan Chemical, founded in 1965, is a leading agrochemical producer in Iran and part of Golsam Industrial Group—the country's largest agrochemical holding with ~700 employees. With state-of-the-art facilities and licenses from international leaders such as Syngenta, Nippon Soda, and Sumitomo Chemicals, Golsam supplies pesticides, fertilizers, vegetable seeds, and biological controls nationwide.

- Improved product quality through advanced R&D and process optimization.
- Designed and developed new agrochemical and biological control products.
- Defined and managed R&D projects, including contract negotiations and progress oversight with universities, research centers, and external researchers.
- Strengthened collaboration between industry and academia to accelerate innovation and product development.

- **Research and Development (R&D) Senior Manager (Part-Time)**

2015 – Present **Radin Plast Kavan (www.radinplast.com)** **Gorgan, Iran**

Radin Plast Kavan, a knowledge-based company certified by the Presidential Science and Technology Vice Presidency, is a leading polymer manufacturer in Northern Iran, employing 150 staff members. The company pioneers polymer-based agricultural products, including irrigation systems, plastic bottles, biological traps, sticky traps, and polyethylene containers.

- ✓ Developed and industrialized new formulations for insect-attracting glue used in sticky rolls and cards—introduced in Iran.
- ✓ Designed new formulations and managed large-scale production of irrigation tapes.
- ✓ Led the production of various polymer-based agricultural containers, including multi-layer plastic bottles.
- ✓ Supervised raw material selection, machinery, and mold design for optimal results production.

- **Research and Development (R&D) Senior Manager (Part-Time)**

2021 – Present **AGH Profile (https://aghprofile.com)** **Agh Qola, Iran**

AGH Profile is a leading manufacturer of UPVC profiles in Northern Iran, operating six extrusion lines with more than 160 employees and exporting to multiple countries.

- ✓ Direct process control and enforce standardized manufacturing procedures.
- ✓ Identify and resolve production challenges impacting efficiency and product quality.
- ✓ Enhance profile formulations to improve durability and reduce production costs.

- **President**

2019 – 2023 **Golestan Science and Technology Park (www.gstpark.ir)** **Gorgan, Iran**

Golestan Science and Technology Park supports commercially viable ideas and fosters sustainable innovation by providing startups with mentorship, financial resources, and access to growth infrastructure.

- Provided leadership and strategic direction for the park's innovation ecosystem.

- Oversaw budgeting, resource allocation, and operational management.
- Directed program execution to accelerate startup development and commercialization.
- Built partnerships with universities, research institutions, and industry stakeholders.
- Supported startups and knowledge-based companies through mentorship, networking, funding facilitation, and access to specialized facilities.

- **Vice President for Research and Technology**

2018- 2019 **Golestan University-GU (www.gu.ac.ir)** **Gorgan, Iran**

The Golestan University's research and technology affairs, which include the incubator center, the industry liaison office, the IT department, the library department, and the publishing center, are under the supervision and control of the vice president for research and technology.

- Policymaking, management, and administration of the University's Research and Technology Councils.
- Leadership and strategic direction of the Research Council, Intellectual Property Council, Incubator Center Council, Entrepreneurship Council, and Publishing Council of Golestan University.
- Oversee the operations and activities of the incubator center, Industry Relations Management, IT department, library department, and publishing center.

- **Dean of the Faculty of Technical and Engineering**

2015- 2018 **Golestan University-GU (www.gu.ac.ir)** **Gorgan, Iran**

As the Dean of the Faculty of Technical and Engineering, I was responsible for providing academic leadership, ensuring program excellence, and fostering a collaborative environment for faculty and students.

- Oversee and enhance the quality of academic programs within the faculty.
- Lead faculty recruitment, development, and evaluation efforts.
- Develop and implement strategic plans to promote faculty growth and research initiatives.
- Cultivated a collegial and inclusive academic environment.
- Acted as the faculty representative in institutional governance and external affairs.

- **Chairman of the Board (Part-Time)**

2009- 2019 **PIKO Technical Inspection Co.** **Tehran, Iran**

PIKO, as a consulting company, has a license from the country's management and planning organization for technical inspection consultant to confirm the quality of polymeric goods and products purchased by companies and organizations.

- ✓ Led the board toward achieving the company's strategy.
- ✓ Overseeing the company's management.

- **Researcher**

2010-2011 **Vrije Universiteit Brussel (www.vub.be)** **Brussels, Belgium**

Electrochemical and Surface Engineering and Physical Chemistry, and Polymer Science Research groups.

Funding and Grants

- **Study and review of O-Rings in sewage pipes, Iran's conditions**
  (Golestan Water & Sewage, $35,000, 2013)
- **Using nanotechnology to prevent lichen on Qaboos Tower, Gonbad Kavus**
  (Golestan Cultural Heritage & Tourism, $12,000, 2018)
- **Design and production of insect repellent glue**
  (Radin Plast Kavan Co., 2021, $55,000)
- **Using polyamide nanocomposite to replace EVOH in four-layer bottles**
  (Iran National Innovation Fund, $195,000, 2024)

TEACHING EXPERIENCE

Graduate Courses

- ► Polymer Characterization
- ► Novel Applications in Polymers
- ► Advanced Physical Chemistry of Polymers
- ► Foam, Adhesive, and Coatings

Undergraduate Courses.

- ► Organic Chemistry
- ► Biotechnology in Polymers
- ► Physical Chemistry of Polymers
- ► Physical and Mechanical Properties of Polymers

POLYMER PROCESSING and CHARACTERIZATION EXPEREIENCE

Processing:

- ► Internal mixer
- ► Single and Twin-Screw Extrusion
- ► Film blowing
- ► Injection Molding

Characterization:

- ► Thermal Analysis (DSC, TGA, TAM, DMTA)
- ► Spectroscopy (FTIR, ATR, UV)
- ► Scanning electron microscope (SEM-EDS, FE-SEM)
- ► X-ray photoelectron spectroscopy (XPS)
- ► Electrochemical Impedance Spectroscopy (EIS)
- ► Rheological Analysis (Rheometeric Mechanical Spectrometer-RMS)
- ► Atomic force microscopy (AFM)

INTERNATIONAL COLLABORATION

Vrije Universiteit Brussel, Electrochemical and Surface Engineering research group (SURF) **Brussels, Belgium**
Prof. Herman Terryn
Research on organic coatings and metal-polymer interface. herman.terryn@vub.be

Vrije Universiteit Brussel, The Department of Materials and Chemistry (MACH) **Brussels, Belgium**
Prof. Guy van Assche
Research on rheological properties and curing kinetics of polymeric coatings. guy.van.assche@vub.be

Delft University of Technology, Faculty of Mechanical, Maritime, and Materials Engineering **Delft, Netherland**
Professor: Arjan Mol
Research on the surface and interface of metal-polymers. j.m.c.mol@tudelft.nl

Delft University of Technology, Faculty of Mechanical, Maritime, and Materials Engineering **Delft, Netherland**
Professor: Peyman Taheri
Research on polymeric nanocomposites. p.taheri@tudelft.nl

Medical University of Gdańsk, Department of Pharmaceutical Chemistry **Gdańsk, Poland**
Professor: Mohammad Reza Saeb
Research on nanocomposites, biomaterials, and biopolymers. mohsaeb@pg.edu.pl

IMPORTANT SCIENTIFIC ACTIVITIES

- Member of the **Board of the Iranian Polymer Society** (2021- present)
- Member of the **Policymaking and Process Improvement Committee for Modern Incubator Centers** (2025-Present)
- Member of the **Executive Board of Recruitment-GU** (2022- present)
- **Educational Council**-GU (2014-2015).
- **Chairman of the board of Research Council-GU** (2018-2019)
- Member of **Entrepreneurship Council** (2014- present)
- **Head of Scientific Committee** of 7th National Seminar on Polymer of Iran (HAMPA), 2023

Honors and awards

- Selected as "**Distinguished Quality Control Manager**" of Iran by the Institute of Standards & Industrial, 2009.
- "**PhD Internship Scholarship**" award by **the Iranian Ministry of Science, Research and Technology**, 2010.
- Selected as "**Distinguished Science and Technology Park**" for increasing the annual revenue by the Ministry of Science, Research, and Technology of Iran,2022.
- "**Deserving of Appreciation**" for the **Development of Effective Technologies by the Ministry of Industry, Mine, and Trade of Iran**, 2022.
- Selected as "**Distinguished Researcher**" by **Golestan University** in 2015, 2017, and 2019.

SUPERVISING and MENTORING RESEARCHERS

Post-Doctoral

- Dr. Ehsan Moghbelli- Texas A&M University, "Development of Photocatalytic Acrylic Coating"

PhD student

- Saeed Najafi-Shoa

Master's student

- More than 25 master's students' theses.

DEVELOPED STANDARD

- " Carbon black — Determination of automated individual pellet hardness — Test method ", Head of the National Standard Technical Commission, INSO 23130.
- " Plastics — Differential scanning calorimetry (DSC) — Part 4 : Determination of specific heat capacity " Head of the National Standard Technical Commission, INSO 7186-4.
- " Plastics — Differential scanning calorimetry (DSC) — Part 8 : Determination of thermal conductivity " Head of the National Standard Technical Commission, INSO 7186-8.
- " Thermoplastics piping systems for soil and waste discharge inside buildings — Airtightness of joints — Test method " Head of the National Standard Technical Commission, INSO 23292.
- " Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics fittings — Impact strength — Test method " Head of the National Standard Technical Commission, INSO 23289.
- " Plastics piping systems — Elastomeric-sealing-ring-type socket joints for use with plastic pipes — Leak tightness under negative pressure, angular deflection, and deformation —Test method " Head of the National Standard Technical Commission, INSO 20062.
- " Rubber and plastics hoses and hose assemblies — Determination of resistance to vacuum " Head of the National Standard Technical Commission, INSO 14445.
- " Thermoplastics pipes for the transport of fluids –Determination of pendulum impact strength by the Charpy method – Part 1: General test method " Head of the National Standard Technical Commission, INSO 12828-1.
- " Thermoplastics pipes for the transport of fluids –Determination of pendulum impact strength by the Charpy method – Part 2: Test conditions for pipes of various materials " Head of the National Standard Technical Commission, INSO 12828-2.
- " Plastics - Thermoplastics pipes for the conveyance of fluids – Nominal outside diameters and nominal pressures – part 1: Metric series " Head of the National Standard Technical Commission, INSO 12322-1.
- " Rubber and plastics hoses and hose assemblies —Measurement of the dimensions of hoses and the lengths of hose assemblies – Test methods " Head of the National Standard Technical Commission, INSO 11447.

PUBLICATIONS (Selected Peered-reviewed Journal Papers)

(Corresponding author indicated by * in the author list)

Biopolymers (Drug Delivery Systems and Bioadhesives):

1. **Mehdi Ghaffari***, Nazanin Habibi, and Mohammad Reza Saeb, (2025). Metal-Organic Framework Composites for Antibacterial Applications. In *Applications of Metal-Organic Framework Composites* (pp. 373-410). Elsevier.

2. H. Madineh, F. Mansourinia, P. Zarrintaj, M. Poostchi, P. Gnatowski, M. Ghaffari, et al*., Stimuli-responsive delivery systems using carbohydrate polymers: A review*, Int. J. Biol. Macromol., (IF=7.7), DOI:10.1016/j.ijbiomac.(2025).142648, 2025.

3. Mojtaba Jallab, Mina Ghaheri, Bita Javan, Vahid Erfani-Moghadam, **Mehdi Ghaffari***, Alireza Goudarzi, "*Synthesis and Comprehensive Characterization of PVA/Chitosan/Cu Nanowires Wound Dressing Hydrogel for Effective In Vitro Wound Healing*", J. Ind. Eng. Chem (IF=5.9), (2025) DOI: 10.1016/j.jiec.2024.11.029.

4. Amirreza Razzaghi, **Mehdi Ghaffari***, "*Synthesis and Functional Evaluation of MIL-100(Fe) as a Nanocarrier for Cyclophosphamide: Investigating Drug Loading and pH-Responsive Release Mechanisms*", (Under preparation).

5. **Mehdi Ghaffari***, Nazanin Habibi, Mohammad Reza Saeb, "*Metal-Organic Frameworks: An Emerging Delivery System for Bone and Cartilage Repair and Regeneration*", (Under preparation).

6. Mobina Bakhshiyani, Mojtaba Jallab, **Mehdi Ghaffari***, *"Development of a high-performance PVA/DOPA bone adhesive incorporated with bioactive glass and hydroxyapatite particles for highly comminuted bone fractures"*, Polymer-Plastics Technology and Materials (IF=2.63), DOI:10.1080/25740881.2021.1995419.

7. Ehteshamzadeh, T., Kakaei, S., **Ghaffari, M***, *"Doxorubicin Embedded Polyvinylpyrrolidone-Coated Fe3O4 Nanoparticles for Targeted Drug Delivery System"*, Journal of Superconductivity and Novel Magnetism (IF=1.51), DOI:10.1007/s10948-021-05952-5 , 2021.

8. Mina Arab, Mojtaba Jallab, **Mehdi Ghaffari***, Ehsan Moghbelli, Mohammad Reza Saeb, "*Synthesis, rheological characterization, and antibacterial activity of polyvinyl alcohol (PVA)/zinc oxide nanoparticles wound dressing, achieved under electron beam irradiation",* Iranian Polymer Journal (IF=1.706), DOI:10.1007/s13726-021-00952-7, 2021.

9. Samaneh Pourbashir, Mohsen Shahrousvand, Mehdi Ghaffari, *"Preparation and characterization of semi-IPNs of polycaprolactone/poly (acrylic acid)/cellulosic nanowhisker as artificial articular cartilage"* International Journal of biological macromolecules (IF=6.95) 142(298-310), 1,1,2020.

Polymeric Coatings:

1.Saeid Najafi-Shoa a, Mehdi Barikani, Morteza Ehsani, Mehdi Ghaffari, Mojtaba Vandalvand, "*Efficient and eco-friendly UV-cured polyurethane coating: Harnessing thiol-yne systems for corrosion protection",* Materials Today Communications *(IF= 4.5), 39, 2024, 109037.*

2. Bakhtiarvand Mozhgan, **Ghaffari Mehdi***, Bahlakeh Ghasem, *"The efficient acrylic-based coating for corrosion protection of aluminum surface utilizing surface-modified ZnO nanoparticles: combined electrochemical studies and DFT computation", Journal of Applied Electrochemistry (IF= 2.7), DOI: 10.1007/s10800-024-02239-0*

2. Zakieh Ghamgosar Khorshidi, Mojtaba Jallab, Ehsan Moghbelli, Alireza Goudarzi, **Mehdi Ghaffari***, *"Photocatalytic Analysis of a Hydrophilic Acrylic Coating/Zinc Oxide Nanocomposite on Glass Substrate"*, Polymer-Plastics Technology and Materials (IF=2.63), 1220-1232, DOI: 10.1080/25740881.2021.1888986, 2021.

3. Ehsan Javadi, **Mehdi Ghaffari***, Ghasem Bahlakeh, Peyman Taheri, *"Photocatalytic, corrosion protection and adhesion properties of acrylic nanocomposite coating containing silane treated nano zinc oxide: A combined experimental and simulation study"* Progress in Organic Coatings (IF=4.469) 135(496-509), 1,10,2019.

4. Pooneh Haghdadeh, **Mehdi Ghaffari***, Bahram Ramezanzadeh, Ghasem Bahlakeh, Mohammad Reza Saeb, *"Polyurethane coatings reinforced with 3-(triethoxysilyl)propyl isocyanate functionalized graphene oxide nanosheets: Mechanical and anti-corrosion properties"* Progress in Organic Coatings (IF=4.469) 136, 2019, 105243.

5. Ghasem Bahlakeh, Bahram Ramezanzadeh, Mohammad Reza Saeb, Herman Terryn, **Mehdi Ghaffari**, *" Corrosion protection properties and interfacial adhesion mechanism of an epoxy/polyamide coating applied on the steel surface decorated with Cerium Oxide film",* Applied Surface Science (IF=6.182) 419, 650-669,2017.

6. **Mehdi Ghaffari***, Mohammad Reza Saeb, B. Ramezanzadeh, Peyman Taheri, "*Demonstration of epoxy/carbon steel interfacial delamination behavior: Electrochemical impedance and X-ray spectroscopic analyses"*, Corrosion Science (IF=5.245) 102 (2016) 326–337.

7. Ghasem Bahlakeh, **Mehdi Ghaffari**, Mohammad Reza Saeb, Bahram Ramezanzadeh, Frank De Proft, and Herman Terryn, "*A Close-up of the Effect of Iron Oxide Type on the Interfacial Interaction between Epoxy and Carbon Steel: Combined Molecular Dynamics Simulations and Quantum Mechanics"*, J. Phys. Chem. C (IF=4.536) 2016, 120, 11014−11026

8. **Mehdi Ghaffari***, Morteza Ehsani, Hossein Ali Khonakdar *"Morphology, rheological and protective properties of epoxy/nano-glassflake systems"* Progress in Organic Coatings (IF=2.358), 2014, 77, 124–130.

9. P. Taheri, **M. Ghaffari**, J.R. Flores, F. Hannour, J.H.W. de Wit, J.M.C. Mol, H. Terryn, "*Bonding Mechanisms at Buried Interfaces between Carboxylic Polymers and Treated Zinc Surfaces",* J. Phys. Chem. C (IF=4.835), 2013, 117, 2780-2792.

10. **Mehdi Ghaffari***, Morteza Ehsani, Hossein Ali Khonakdar, Guy Van Assche, Herman Terryn, *" The kinetic analysis of isothermal curing reaction of an epoxy resin glassflake nanocomposite",* Thermochimica Acta (IF=2.105), Volume 549, 2012, Pages 81-86.

Advanced Materials:

1. Seyed Mostafa Hosseini , **Mehdi Ghaffari*** , Seyed Mohammad Javad Hosseini Kahsari , Rasool Bahrampoury, "A study on nano-graphene oxide surface modification for the design of paraffin/graphene oxide phase change material ", Journal of Energy Storage (IF=8.9), 101, 2024, 113738.

2. Saeid Najafi-Shoa, Mehdi Barikan , Morteza Ehsani , **Mehdi Ghaffari**, *"Cobalt-Based Ionic Liquid Grafted on Graphene as a Heterogeneous Catalyst for Poly (Ethylene Terephthalate) Glycolysis*", Polymer Degradation and Stability (IF=5.07), DOI:10.1016/j.polymdegradstab.2021.109691, 2021.

3. Mehrasa Amiri, **Mehdi Ghaffari***, Ali Mirzaee, Ghasem Bahlakeh, Mohammad Reza Saeb, *"Development and anti-corrosion performance of hyperbranched polyglycerol-decorated Fe3O4@SiO2 on mild steel in 1.0 M HCl"*, Journal of Molecular Liquids (IF=5.06),314, 2020, 113597.

4. Arezoo Avid, Seyed Hassan Jafari, Hossein Ali Khonakdar, **Mehdi Ghaffari**, Beate Krause, Petra Pötschke, "*Surface modification of MWCNT and its influence on properties of paraffin/MWCNT nanocomposites as phase change material"* Journal of Applied Polymer Science (IF=3.125) 137(48428), 5,3,2020.

5. Mohammad M Noori, Hossein Ali Khonakdar, Hamed Azizi, **Mehdi Ghaffari**, Mohammad Arjmand, Seyed H Jafari, *"Paraffin/CuO nanocomposites as phase change materials: Effect of surface modification of CuO"* Polymer Composites (IF=2.265) 2019.

6. Saeed GilakHakimabadi, Morteza Ehsani, Hossein Ali Khonakdar, **Mehdi Ghaffari**, Seyed Hassan Jafari, *"Controlled-release of ferulic acid from active packaging based on LDPE/EVA blend: Experimental and modeling"* Food Packaging and Shelf Life (IF=4.244) 22(100392), 1,12,2019.

7. Maryam Halvaee, Khadijeh Didehban, Vahabodin Goodarzi, **Mehdi Ghaffari**, Morteza Ehsani, Mohammad Reza Saeb, *"Comparison of pristine and polyaniline-grafted MWCNT s as conductive sensor elements for phase change materials: Thermal conductivity trend analysis"* Journal of Applied Polymer Science (IF=4.069) 134(47), 15,12,2017.

8. M.Faker, M.K.Razavi Aghjeh, **M. Ghaffari**, "*Rheology, Morphology and Mechanical Properties of Polyethylene/ Ethylene Vinyl Acetate Copolymer (PE/EVA) Blends*", European Polymer Journal (IF=2.74), 2008, 44, 1834-1842.

REFERENCES

- **Prof. Herman Terryn**, Professor at the Faculty of Engineering, Vrije University of Brussels (VUB) and Part-time professor at the Department of Materials Science and Engineering, TU Delft, herman.terryn@vub.be, Belgium**.**
- **Prof. Morteza Ehsani,** Prof. at Iran Polymer and Petrochemical Institute, m.ehsani@ippi.ac.ir, Iran.
- **Prof. Peyman Taheri,** P.Taheri@tudelft.nl**,** Professor at the Department of Materials Science and Engineering, TU Delft, Netherlands.