Farbod Tabesh, Ph.D.
Curriculum Vitae

Personal Information

Current Contact
Department of Radiology
Stanford University
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Palo Alto, CA 94304
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Personal webpage, LinkedIn, Google Scholar

Research Focus

Engineering molecularly defined nonviral delivery systems and multifunctional nanocomposites to overcome intracellular barriers to therapeutic cargo delivery; integrating molecular imaging with nanomedicine to interrogate biological mechanisms and guide therapeutic development; and developing targeted gene-editing strategies for precision treatment of cancer and neurodegenerative disease.

Academic Appointments

Postdoctoral Scholar — Jan 2022 - Present
Department of Radiology, Stanford University School of Medicine
Mentor: Ramasamy Paulmurugan, Ph.D.

Lecturer, Translational Research and Applied Medicine (TRAM) — Sep 2025 - Present
Stanford University School of Medicine

Lecturer, Mission College — Sep 2026 - Present
Chemistry courses

Lecturer, Carrington College — Apr 2022 - Present
Chemistry courses

Education

1. Ph.D., Organic-Polymer Chemistry — Sep 2014 – Sep 2019
Advisors: Prof. Shadpour Mallakpour, Prof. Amir Abdolmaleki, Isfahan University of Technology, Iran
Dissertation: Preparation and characterization of hydrogel nanocomposites based on tragacanth gum, pure, and EDTA-modified $CaCO_3$ NPs: Application in the removal of methylene blue dye and Pb^{2+}
GPA: 3.7

2. M.Sc., Organic Chemistry — Sep 2012 - Sep 2014
Advisor: Prof. Golam Bagheri Marandi, Karaj Azad University, Iran
Thesis: Synthesis and study on properties of the hydrogel Nanocomposite based on acrylamide-itaconic acid comonomers synthesized in the presence of functionalized and unfunctionalized carbon nanotubes using ultrasound waves

3. B.Sc., Applied Chemistry — Sep 2008 - Sep 2012
Karaj Azad University, Iran

Research Experience

1. Postdoctoral Scholar — Jan 2022 – Present
Stanford University School of Medicine, USA,
Description:
- *Chemical Design of Nonviral Delivery Systems:* Designed and synthesized multifunctional polymeric nanocomposites incorporating chitosan, PEI, gold nanostars, β-cyclodextrin, and targeting peptides to investigate relationships between material architecture and functional nucleic-acid delivery.

- *Intracellular Delivery and Gene Editing:* Developed polymeric delivery systems for DNA/RNA cargo and CRISPR-based gene editing, including targeted strategies for LRRK2-associated Parkinson's disease.
- *Molecular Imaging and Therapeutic Response:* Developed targeted microbubble platforms for ultrasound molecular imaging of tumor biomarkers and investigated imaging-based assessment of immune checkpoint therapy response.
- *Therapeutic Nanomedicine:* Developed PLGA-based platforms for miRNA delivery, RNA vaccination, and immune-directed cancer therapy.
- *Research Leadership and Mentoring:* Led interdisciplinary projects spanning polymer chemistry, nanomedicine, molecular imaging, and therapeutic development; contributed to grant development, scientific writing, conference presentations, and mentorship of junior researchers.

2. Ph.D. Candidate Sep 2014 - Sep 2019
Isfahan University of Technology, Iran
Description:
Synthesizing natural nanocomposite hydrogels from tragacanth gum to remove water pollutants such as heavy metal ions and dyes.

3. M.Sc., Student Sep 2012 - Sep 2014
Karaj Azad University, Iran
Description:
Radical polymerization of synthetic and biocompatible hydrogels (from acrylamide and carbon nanotubes) to remove water pollutants like dyes.

4. B.Sc. Student Sep 2008 - Sep 2012
Karaj Azad University, Iran
Description:
Preparation of organometallic compounds ($SnCl_2$) and loading antibiotic drugs (like ciprofloxacin) on them as anti-cancer drugs

Teaching Experience

1. Lecturer, Stanford University, Stanford USA Sep 2025 – Present
Translational Research and Applied Medicine (TRAM)
Courses:
- Antibody-Drug Conjugates in Cancer Therapy
- Chemistry of Drug Delivery Systems in Cancer Therapy

2. Chemistry Lecturer, Mission College, Santa Clara, USA Sep 2026 - Present
Courses:
- General Chemistry with Lab
- Organic Chemistry with Lab

3. Chemistry Lecturer, Carrington College, San Jose, USA Apr 2022 - Present
Courses:
- General Chemistry with Lab
- Organic Chemistry with Lab

4. Teaching Assistant, Isfahan University of Technology Spring 2019
Courses:
Organic Chemistry

5. Chemistry Tutor Sep 2010 - Present
Courses:
- General Chemistry
- Organic Chemistry I, II, and III
- Polymer Chemistry
- Identification of Organic Compounds
- Introduction to Spectroscopy
- Organic Synthesis

Editorial and Professional Service

1. Associate Editor Sep 2026 - Present
Molecular Imaging and Biology Journal

2. Invited Guest Editor 2026 - Present
Special issue "Nanotechnology and Biomaterials in Targeted Gene Delivery and Cancer Therapy", Journal of Functional Biomaterials

3. Organization Committee Oct 2024
The Early Detection of Cancer Conference, San Francisco, USA

4. Abstract referee 2023 - Present
- World Molecular Imaging Congress
- Early Detection of Cancer Conference

5. Manuscript Referee 2023 - Present
ACS, Nature, Elsevier, Springer, MDPI

Honors and Awards

1. **Best Poster Award in Immunology/Inflammation** Sep 2026
   World Molecular Imaging Congress
2. **Student Travel Award** Sep 2026
   World Molecular Imaging Congress
3. **Best Poster Presentation Award** Aug 2026
   Stanford CREST
4. **Student Travel Award** Sep 2025
   World Molecular Imaging Conference
5. **Audience Choice Presentation Award** Aug 2025
   Stanford CREST
6. **Best Poster Presentation Award** Aug 2024
   Stanford CREST

Fellowships and Research Support

1. **NIH T32 Fellowship** Feb 2024 – Feb 2026
   Stanford Cancer Imaging Training (SCIT) Program
1. **The Helena Anna Henzl-Gabor Young Women in Science Fund for Postdoctoral Scholars Travel Grant** Sep 2026
   Stanford University

Publications

Peer-Reviewed Research Papers – Published

1. J. Baek, D. Hyun, A. Natarajan, **F. Tabesh**, R. Paulmurugan, J. Dahl, 2026. Improved Nondestructive Ultrasound Molecular Imaging with Lightweight Convolutional Neural Network, *IEEE Transactions on Medical Imaging*, just accepted.
2. H.S. Hashemi, D. Hyun, N. Nguyen, J. Beak, A. Natarajan, **F. Tabesh**, A. Andrzejek, R. Paulmurugan, J.J. Dahl, 2026. Enhancing Ultrasound Molecular Imaging: Toward Real-Time RPCA-Based Filtering to Differentiate Bound and Free Microbubbles, *IEEE Trans Ultrason Ferroelectr Freq Control*, 73, 183-193.
3. N. Sadeghipour*, **F. Tabesh***, A Natarajan, A Lutz, R Paulmurugan, A. El Kaffas, 2025. Molecular ultrasound imaging of PD-L1 expression on cancer endothelial cells, *Ultrasound Med Bio*, 51, 1675-1681.
4. **F. Tabesh**, G Haghverdi, K.P. Devarakonda, T.F. Massoud, R. Paulmurugan, 2024. Synthesis, characterization, and application of a biocompatible gene delivery nanocarrier constructed from gold nanostars and a chitosan–cyclodextrin–poly(ethylene imine) graft polymer, *Mater Adv*, 5, 8007-8016
5. **F. Tabesh**, S. Mallakpour, 2024, Removal of the environmental pollutant methylene blue using bio-nanohydrogel nanocomposite containing tragacanth gum and vitamin C-functionalized carbon nanotube, *Polym Bull.* 81, 1513-1527, https://doi.org/10.1007/s00289-023-04781-x.
6. R. Bam, A. Natarajan, **F. Tabesh**, R. Paulmurugan, and JJ. Dahl, 2023. Synthesis and Evaluation of Clinically Translatable Targeted Microbubbles Using a Microfluidic Device for In Vivo Ultrasound Molecular Imaging, *Int J Mol Sci*, 24(10), 9048; https://doi.org/10.3390/ijms24109048.

7. S. Mallakpour, **F. Tabesh**, 2021, Effective adsorption of methylene blue dye from water solution using renewable natural hydrogel bionanocomposite based on tragacanth gum: Linear-nonlinear calculations. *Int J Biol Macromol*. 187, 319-324 (https://doi.org/10.1016/j.ijbiomac.2021.07.105)
8. S. Mallakpour, **F. Tabesh**, 2021. Renewable bionanohydrogels based on tragacanth gum for the adsorption of Pb^{2+}: Study of isotherm, kinetic models, and phenomenology. *Environ Technol Innov*. 23, 101723 (https://doi.org/10.1016/j.eti.2021.101723).
9. S. Mallakpour, **F. Tabesh**, 2021. Green and plant-based adsorbent from tragacanth gum and carboxyl-functionalized carbon nanotube hydrogel bionanocomposite for the super removal of methylene blue dye. *Int J Biol Macromol*. 166, 722-729 (https://doi.org/10.1016/j.ijbiomac.2020.10.229).
10. S. Mallakpour, **F. Tabesh**, 2019. Tragacanth gum based hydrogel nanocomposites for the adsorption of methylene blue: Comparison of linear and non-linear forms of different adsorption isotherm and kinetics models. *Int J Biol Macromol*. 133, 754-766 (https://doi.org/10.1016/j.ijbiomac.2019.04.129).
11. S. Mallakpour, A. Abdolmaleki, **F. Tabesh**, 2018. Ultrasonic-assisted manufacturing of new hydrogel nanocomposite biosorbent containing calcium carbonate nanoparticles and tragacanth gum for removal of heavy metal. *Ultrason Sonochem*. 41, 572-581 (https://doi.org/10.1016/j.ultsonch.2017.10.022).

Peer-Reviewed Research Papers – Submitted

1. **F. Tabesh**, A. Natarajan, R. Paulmurugan, A. El Kaffas, Contrast-Enhanced Ultrasound Molecular Imaging of Tumor-Specific Vascular PD-L1 as a Predictive Marker for Cancer Immunotherapy.
2. **F. Tabesh**, A. DeJong, S. Thangudu, S. Mehta, G. Haghverdi, T.F. Masoud, R. Paulmurugan, Chemical grafting of chitosan and poly(ethylene imine) unites mucoadhesion and proton buffering for universal intracellular biomacromolecule delivery.
3. **F. Tabesh**, A. Zavareh, G. Haghverdi, M. Pandrala, R. Paulmurugan, Therapeutic and Prophylactic Synergistic Immunotherapy Using miR-122–Loaded PLGA-MUC1 Nanoparticles in Triple-Negative Breast Cancer
4. **F. Tabesh**, R. Korubilli, G. Haghverdi, S. Thangudu, S. Mehta, R. Paulmurugan, Treatment of Triple-Negative Breast Cancer by Dual PD-L1 and VCAM-1 checkpoint Blockade through T- and B-Cell-Mediated Systemic Anti-Tumor Immunity.
5. G. Haghverdi*, **F. Tabesh***, R Paulmurugan, Therapeutic suicide gene delivery by chitosan/poly(ethylene imine) co-polymer for treatment of triple-negative breast cancer: In vitro and in vivo aspects.

Peer-Reviewed Review Articles

1. H. Sepehrmansourie, M. Zarei, S. Mallakpour, **F. Tabesh***, M.A. Zolfigol*, 2025. Ipso nitration in organic synthesis, *RSC Adv*., 15, 23499-23558.
2. **F. Tabesh**, S. Mallakpour, and C.H. Hussain, 2023. Recent advances in magnetic semiconductor $ZnFe_2O_4$ nanoceramics: History, properties, synthesis, characterization, and applications, *J Solid State Chem*. 322, 123940 (https://doi.org/10.1016/j.jssc.2023.123940).
3. S. Mallakpour, **F. Tabesh**, and C.H. Hussain, 2022. A new trend of using poly(vinyl alcohol) in 3D and 4D printing technologies: Process and applications. *Adv Colloid Interface Sci*. 301, 102605 (https://doi.org/10.1016/j.cis.2022.102605).
4. S. Mallakpour, **F. Tabesh**, and C.H. Hussain, 2021. 3D and 4D printing: From innovation to evolution. *Adv Colloid Interface Sci*. 294, 102482 (https://doi.org/10.1016/j.cis.2021.102482).
5. S. Mallakpour, **F. Tabesh**, and C.H. Hussain, 2023. Potential of tragacanth gum in the industries: a short journey from past to the future. *Polym Bull*. 80, 4643-4662 (https://doi.org/10.1007/s00289-022-04284-1).
6. S. Mallakpour, **F. Tabesh**, and C.H. Hussain, 2023. Water decontamination using $CaCO_3$ nanostructure and its nanocomposites: current advances. *Polym Bull*. 80, pages7201–7219 (https://doi.org/10.1007/s00289-022-04431-8).

Book chapters

1. S. Mallakpour, **F. Tabesh**, 2021, Microwave-assisted synthesis of chiral polymeric materials: Properties and applications, *Elsevier* (https://doi.org/10.1016/B978-0-12-819848-3.00017-7).
2. S. Mallakpour, **F. Tabesh**, 2020, Fabrication Technologies of Layered Double Hydroxide Polymer Nanocomposites, *Elsevier* (https://doi.org/10.1016/B978-0-08-101903-0.00003-9)
3. S. Mallakpour, **F. Tabesh**, Application of gum polysaccharides nanocomposites in the removal of industrial organic and inorganic pollutants, *Elsevier* (https://doi.org/10.1016/B978-0-12-821497-8.00018-6).
4. S. Mallakpour, V. Behranvand, **F. Tabesh**, Natural polymer-based organic-inorganic hybrid nanosorbents, *Elsevier* (https://doi.org/10.1016/B978-0-12-820541-9.00005-3).
5. S. Mallakpour, **F. Tabesh**, Metal oxides and biopolymer/metal oxides bionanocomposites as green nanomaterials for heavy metals removal, *Springer* (https://link.springer.com/chapter/10.1007/978-3-030-69492-0_3)

6. S. Mallakpour, **F. Tabesh**, C.H. Hussain, 2024, Entering a new era in pharmaceutics through 3D/4D printing technologies, *Elsevier*. (https://www.sciencedirect.com/science/article/pii/B9780323953832000068)

Presentations & Conferences

Oral Presentations

1. *World Molecular Imaging Congress 2026*, Salt Lake City, Utah: Multimodal Molecular Imaging of Immune Dynamics to Guide Immune Priming and Checkpoint Blockade in Triple-Negative Breast Cancer
2. *World Molecular Imaging Congress 2025,* Anchorage, Alaska: Non-Invasive Imaging of CRISPR-Cas9-ABE Gene Editing Mediated Neurotherapy for Parkinson's Disease
3. *29th European Symposium on Ultrasound Contrast Imaging,* Jan 2024, Rotterdam: *Ultrasound Molecular Imaging of Endothelial PD-L1 to Guide Immune Checkpoint Therapy*
4. *13th International Seminar on Polymer Science and Technology,* Nov 2018, Tehran: *Preparation, characterization, and application of bio-based hydrogel nanocomposite in water treatment*
5. *Chemical and Physical Aspects of Self-Healing Materials,* IUT, Iran, 2016
6. *Carbon Nanotube,* KIAU, Iran, 2013

Poster Presentations

1. *The Early Detection of Cancer Conference,* Oct 2024, San Francisco, A Novel MicroRNA Targeted Anti-Cancer Vaccine for Hepatocellular Carcinoma Therapy
2. *UltraCon,* Apr 2024, Austin: Assessment of Contrast and Molecular Ultrasound Parameters to Predict Response to anti-PD-L1 Immune Checkpoint Inhibitor
3. *American Association for Cancer Research Annual Meeting,* Apr 2024, San Diego: Imaging Endothelial PD-L1 expression with ultrasound molecular imaging to help to stratify immune checkpoint inhibitor (ICI) response
4. *29th European Symposium on Ultrasound Contrast Imaging,* Jan 2024, Rotterdam: Multi-parametric Assessment of Contrast and Molecular Ultrasound to Predict Response to anti-PD-L1 Immune Checkpoint Inhibitor
5. *29th European Symposium on Ultrasound Contrast Imaging,* Jan 2024, Rotterdam: *Ultrasound-Stimulated Microbubble Mediated Modulation of Endothelial Immunogenicity*
6. *World Molecular Imaging Congress 2023,* Prague: Targeted Delivery of Therapeutic Genes to Triple-Negative Breast Cancer Cells using a Polymeric Nanocomposite of Gold Nanostars
7. *Medical Imaging 2023: Ultrasonic Imaging and Tomography: Quantitative methods for molecular ultrasound imaging*
8. A. Natarajan, F. Tabesh, D. Hyun, R. Paulmurugan, JJ. Dahl. *Abstract LB115: Simultaneous whole-body ultrasound contrast imaging: A novel high throughput preclinical platform for targeted molecular imaging studies*, Cancer Res. 83, LB115-LB115.
9. JJ. Dahl, R. Bam, D. Hyun, A. Natarajan, F. Tabesh, R. Paulmurugan. *Toward the clinical application of ultrasound molecular imaging in the early detection of breast cancer*, J Acoust Soc Am. 153, A138-A138.
10. 26th Iranian Seminar of Organic Chemistry (ISOC 2019), Purgation of the Environment Using Natural Materials from the Nature: *Study of the Recent Development in Isotherms, Kinetics, And Thermodynamics of the Adsorption*, UOZ, Zabol, Iran, 2019.

Mentoring experience

I have mentored Ph.D. candidates, M.Sc., and B.Sc. students, of whom, some are continuing their education in renowned universities (such as University of Utah and Iowa State University). I have had great pleasure in mentoring 3 summer interns during the Canary Cancer Research Education Summer Training (CREST) Program, and they have been awarded with Best Poster Presentation Award and Audience Choice Presentation Award. Noteworthy to mention that their research outcomes were drafted as a research paper and they are under submission.

Collaborative Research

1. Prof. Jeremy Dahl, Stanford University, USA	2022 - Present
2. Dr. Ahmed El Kaffas, UC San Diego, USA	2022 - Present
3. Prof. Tarik F. Masoud, Stanford University, USA	2022 - Present
4. AnGes Inc., Japan	2023 - Present

Professional Memberships

- American Chemical Society
- World Molecular Imaging Society
- Early Detection of Cancer Society

References

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Prof. Shadpour Mallakpour
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