Hanieh Safari

Assistant Professor of Chemical Engineering, Sharif University of Technology
Rm 402, Institute for Biotechnology and Environmental Engineering, Azadi Street, Tehran, Iran
Email: hanieh.safari@sharif.edu, Phone: +98-9045033055

EDUCATION

Ph.D. in Chemical Engineering **University of Michigan, April 2020**
Advisor: Prof. Omolola Eniola-Adefeso
Dissertation: Fabrication of Non-Spherical Biodegradable Particles for Drug Delivery Applications and Studying the Impact of Shape on the Efficacy of Particulate Carriers

MSE in Chemical Engineering **University of Michigan, April 2016**

BSc in Chemical Engineering **Sharif University of Technology, February 2014**

PROFESSIONAL APPOINTMENTS

Assistant Professor **Sharif University of Technology, Tehran, Iran**
Department of Chemical and Petroleum Engineering 2022-Present

Postdoctoral Researcher **University of Delaware, Newark, DE, United States**
Department of Chemical and Biomolecular Engineering 2020-2021
Research advisor: Prof. Millicent Sullivan
Research co-advisor: Prof. Kristi Kiick

Graduate Research Assistant **University of Michigan, Ann Arbor, MI, United States**
Department of Chemical Engineering 2014-2020
Research advisor: Prof. Omolola Eniola-Adefeso

RESEARCH INTERESTS

- Biomaterials
- Drug Delivery
- Immunomodulation

AWARDS AND HONORS

- Yoo Hang Kim Young Women Scientist Award, The Association of Academies and Societies of Sciences in Asia, 2024
- Barbour Scholarship, 2018-2019, University of Michigan
- Rackham Research Grant, 2018, University of Michigan
- Gridley Dement Fellowship Award, Fall 2014, University of Michigan
- Silver Medal at the 42nd International Chemistry Olympiad, 2010, Japan
- Gold Medal at the 19th Iranian National Chemistry Olympiad, 2009

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PUBLICATIONS

Peer-reviewed Journal Articles

*: Corresponding author

1. Safari, M., Abbasi, P., Momeni, S. A., Shahrabi Farahani, M., **Safari, H***. SpiralDesigner: an AI-assisted Design Interface for Efficient Separation of Neutrally Buoyant and Non-buoyant Particles Using Spiral Microfluidic Devices, *Chemical Engineering Science*, 2024.
2. Kupor, D., Felder, M. L., **Safari, H.,** Eniola-Adefeso, O. Deoxycholate-based Composite Microparticles for Localized Adipocytolysis, *Gen Biotechnology*, 2024.
3. **Safari, H*.**, Mashayekhan, S. Inflammation and mental health disorders: Immunomodulation as a potential therapy for psychiatric conditions, *Current Pharmaceutical Design* 29, 2023: 2841-2852.
4. Mohsenifard, S., Mashayekhan, S., **Safari, H.** A hybrid cartilage extracellular matrix-based hydrogel/PCL scaffold incorporated with Kartogenin for cartilage tissue engineering. *Journal of Biomaterials Applications* 37, 2023: 1243-1258.
5. **Safari, H.*,** Felder, M. L., Kaczorowski, N., Eniola-Adefeso, O. Effect of the emulsion solvent evaporation technique cosolvent choice on the loading efficiency and release profile of Anti-CD47 from PLGA nanospheres. *Journal of Pharmaceutical Sciences* 111, 2022 (2525-2530).
6. **Safari, H.,** Kaczorowski, N., Felder, M. L., Brannon, E. R., Varghese, M, Singer, K, Eniola-Adefeso, O. Biodegradable, bile salt microparticles for localized fat dissolution. *Science Advances* 6, 2020: eabd8019.
7. **Safari, H.**, Kelley, W. J., Saito, E., Kaczorowski, N., Carethers, L., Shea, L.D., Eniola-Adefeso, O. Neutrophils preferentially phagocytose elongated particles- Opportunity for selective targeting in acute inflammatory diseases. *Science Advances* 6, 2020: eaba1474.
8. **Safari, H**., Adili, R., Holinstat, M., Eniola-Adefeso, O. Modified two-step emulsion solvent evaporation technique for fabricating biodegradable rod-shaped particles in submicron size range. *Journal of Colloid and Interface Science* 518, 2018: 174-183.
9. Kelley, W. J., **Safari, H.**, Lopez-Cazares, G., & Eniola-Adefeso, O. Vascular-targeted nanocarriers: design considerations and strategies for successful treatment of atherosclerosis and other vascular diseases. *Wiley Interdisciplinary Reviews: Nanomedicine and Nanobiotechnology* 8.6, 2016: 909-926.
10. Ghamari, M., Tabatabaee Yazdi, F., Alemzadeh, I., Vosoughi, M., Varidi, M., **Safari, H**. Optimization of culture medium containing date waste for lipase production by *Aspergillus niger* using RSM method. *Iranian Journal of Food Science and Technology* 14. 65 (2017): 85-96.
11. Ghamari, M., Tabatabaee Yazdi, F., Alemzadeh, I., Vosoughi, M., Varidi, M., **Safari, H**. Optimization of physical parameters effecting Lipase production by *Aspergillus niger* in culture medium containing date waste and studying the characters of the produced enzyme. *Iranian Journal of Food Science and Technology* 13. 57 (2016): 159-167.

Manuscripts in Preparation

1. Abdollahi, M., Asadi, N., Delzendehrooy, A., **Safari, H*.** Optimization of the Loading Efficiency and Release Profile of the Secondary Therapeutic in Drug Particles Fabricated via Self-assembly, *Journal of Pharmaceutical Sciences* (Under Review).
2. Delzendehrooy, A., Ranjbar, A., Forghan Tarighe, F., Mashayekhan, S., **Safari, H***. Engineering the Responses of Immune Cells Through the Proper Selection and Design of Biomaterials for Tissue Regenerative Applications, *Polymer Composites* (Submitted).
3. Delzendehrooy, A., Mashayekhan, S., **Safari, H*.** Impact of Composition on the Uptake of Complex Coacervates by Macrophages for Topical Drug Delivery Applications (To be Submitted).
4. Felder, M. L., Kupor, D., Bain, L. J., Sanchez, C., **Safari, H.,** Eniola-Adefeso, O. A Versatile Platform for the Fabrication of Steroid Microparticles with Controlled Morphologies for Drug Delivery Applications (To be Submitted).

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Book Chapters

1. **Safari, H.**, Lee, J. K. H, Eniola-Adefeso, O. Effect of Shape, Rigidity, Size, and Flow on Targeting. *Nanoparticles for Biomedical Applications*. *Elsevier* (2020): 55-66.

Patents

1. Eniola-Adefeso, O., **Safari, H.,** Felder, M. L. Composite drug particles and uses thereof. **Patent Filed (2020)**.

PRESENTATIONS AND ABSTRACTS

Presenting author underlined

1. **Safari, H.** Specific Drug Delivery to Macrophages by Alginate-rich Coacervates. The International Symposium on Biomedical Engineering, Jakarta, Indonesia, 2024 (Invited Online Speaker).
2. Delzendehrooy, A., **Safari, H.,** Mashayekhan, S. Alginate-rich Coacervates for Specific Drug Delivery to Macrophages. ACS National Meeting, August 2024.
3. Kupor, D., Felder, M. L., **Safari, H.**, Eniola-Adefeso, O. Composite Deoxycholic Acid-Based Microparticles for Localized Adipose Tissue Reduction with Reduced Inflammation. AICHE Annual Meeting, November 2022.
4. Felder, M. L., Kupor, D., **Safari, H.**, Eniola-Adefeso, O. Fabrication and Characterization of Composite Particles for Controlled Release Drug Delivery Applications. AICHE Annual Meeting, November 2022.
5. **Safari, H.**, Felder, M. L., Eniola-Adefeso, O. A scalable gold nanoparticle-templating method for generating erodible drug microparticles without use of exogenous biodegradable polymers. AICHE Annual Meeting, November 2021.
6. **Safari, H.,** Kaczorowski, N., Eniola-Adefeso, O. The effect of cosolvents on the loading efficiency and release profile of anti-CD47 in the emulsion solvent evaporation technique. AICHE Annual Meeting, November 2020.
7. **Safari, H.,** Kelley, W. J., Saito, E., Kaczorowski, N., Carethers, L., Shea, L. D., Eniola-Adefeso, O. Elongated Particles are preferentially phagocytosed by neutrophils- Opportunity for selective targeting of leukocytes in acute inflammation. AICHE Annual Meeting, November 2020.
8. **Safari, H.,** Kelley, W. J., Saito, E., Kaczorowski, N., Carethers, L., Shea, L. D., Eniola-Adefeso, O. Elongated Particles are preferentially phagocytosed by neutrophils- Opportunity for selective targeting of leukocytes in acute inflammation. BMES Annual Meeting, October 2020.
9. **Safari, H.,** Adili, R., Holinstat, M., Eniola-Adefeso, O. Fabrication of biodegradable rod-shaped drug carriers with modified two-step emulsion solvent evaporation technique. AICHE Annual Meeting, Pittsburgh, PA, October 2018.
10. **Safari, H.**, Eniola-Adefeso, O. Modified two-step emulsion solvent evaporation technique for fabricating biodegradable rodshaped drug carriers. 254th ACS National Meeting, Washington, DC, August 2017.
11. **Safari, H.,** Eniola-Adefeso, O. Two-step emulsion solvent evaporation technique for fabricating biodegradable rod-shaped drug carriers. University of Michigan Engineering Graduate Symposium, 2017 (Best presentation of the session).
12. Sobczynski, D., **Safari, H.,** Eniola-Adefeso, O. Plasma immunoglobulins drive corona-induced negative adhesion of drug carriers in human blood flow. AICHE Annual Meeting, San Francisco, CA, November 2016.
13. **Safari, H.,** Eniola-Adefeso, O. Fabrication of Biodegradable Spheroidal Drug Carriers with Modified Emulsion Solvent Evaporation Technique. AICHE Annual Meeting, San Francisco, CA, November 2016.

TEACHING EXPERIENCES

Courses Instructed

- Introduction to Heat Transfer, Winter 2024, Sharif University of Technology
- Unit Operations of Chemical Engineering, Fall 2023-24, Sharif University of Technology
- Numerical Methods in Chemical Engineering, Fall 2022-24 and Winter 2023-24, Sharif University of Technology
- Transport Phenomena in Biological Systems (Graduate Level Course for Biotechnology Students, Co-taught by S. Mashayekhan), Winter 2023-24, Sharif University of Technology

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- Artificial Organs (Graduate Level Course for Biomedical Engineering Students, Co-taught by M. J. Abdekhodaei), Winter 2023-24, Sharif University of Technology
- Advanced Analytical Mathematics (Graduate Level Course for Biomedical Engineering Students), Fall 2022-23, Sharif University of Technology

Teaching Assistantships

- Materials and Energy Balance, Fall 2017, University of Michigan
- Chemical Engineering Thermodynamics, Winter 2016 and Winter 2017, University of Michigan

PROFESSIONAL SERVICE

Sharif University of Technology ChE Department Level Service

- Director of International Affairs 2023-Present
  - Initiator and organizer of international seminar series of the ChE department 2024-Present
- Organizer and Manager of the Undergraduate Defense Sessions 2023-Present

Journal Reviewer

The AAPS Journal, ACS Biomaterials Science and Engineering, Molecular Pharmaceutics, Bioengineering and Translational Medicine, ACS Applied Nano Materials, Journal of Nanobiotechnology, Advanced Drug Delivery Reviews, Smart Medicine, Bioconjugate Chemistry