Stanford



Rohollah Nasiri

Postdoctoral Scholar, Radiation Physics

Bio

BIO

Rohollah is a Postdoctoral Researcher at Stanford University, with a background in Mechanical Engineering and over 10 years of research and development experience in biomedical systems and device engineering. His current research focuses on the design, fabrication, and integration of microfluidic tumor models for preclinical radiotherapy applications. His work combines mechanical design, microfluidic engineering, computational modeling, optical sensing, and experimental system integration to develop and validate advanced biomedical platforms.

He received his PhD in Mechanical Engineering from Sharif University of Technology, Tehran, Iran, in 2021. During his doctoral studies, he spent two years as a visiting researcher at the University of California, Los Angeles (UCLA), where he worked on microfluidics, organ on a chip systems, and tissue engineering. From September 2021 to August 2023, he was a Postdoctoral Researcher at KTH Royal Institute of Technology, where he developed microfluidic platforms and integrated electrochemical biosensors for biomedical applications.

His research interests include mechanical design and prototyping, biomedical device engineering, microfluidics, organ on a chip systems, sensor development and integration, multiphysics simulation, computational fluid dynamics, finite element analysis, microfabrication, and engineering of integrated biomedical systems.

HONORS AND AWARDS

- Best in Physics, AAPM Annual Conference, Vancouver, Canada. (2026)
- Bio-X Travel Award, Stanford University (2026)
- Medical Physics Seed Grant, Department of Radiation Oncology, Stanford University (2026)
- Awarded the Mikitani Cancer Research Fund, Stanford University (2025/7)
- Seed grant for "Organ-on-a-chip systems in Biomedicine" mini-course development, Stanford University (2025/10)
- Award for Best Poster Presentation, Medical Physics Research Retreat, Stanford University (2025)
- Awarded School of Medicine Dean's Postdoctoral Fellowship, Stanford University (2025)
- Travel award for BMES 2024 conference, Biosensors (MDPI) (2024/10)
- Award for Best Poster of Scientific Merit, Medical Physics Research Retreat, Stanford University (2024)
- School of Medicine seed grant for Microfluidics and Organ-on-a-chip mini-course development, Stanford University (2024)
- Travel award for MPS World Summit 2023, Biosensors journal (2023)
- Awarded the Mechanical Engineering Department’s Excellence in Research Prize, Sharif University of Technology (2020)
- Best poster presentation award, Radiology research day, University of California, Los Angeles (2019)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, The American Association of Physicists in Medicine (AAPM) (2026 - present)
- Guest editor for special issue "Microfluidics and Organ-on-a-Chip for Disease Modeling and Drug Screening (2nd Edition)", Biosensors journal (MDPI) (2022 - present)
- Member, Biomedical Engineering Society (2024 - present)

PROFESSIONAL EDUCATION

- Postdoc, KTH Royal Institute of Technology , Biomedical Engineering (2023)
- PhD, Sharif University of Technology , Mechanical Engineering (Bioengineering) (2021)
- Visiting Researcher, University of California, Los Angeles (UCLA) , Bioengineering (2020)
- MSc, Sharif University of Technology , Mechanical Engineering (2014)
- BSc, University of Tehran , Mechanical Engineering (2012)

STANFORD ADVISORS

- Guillem Pratx, Postdoctoral Faculty Sponsor

LINKS

- Google Scholar: https://scholar.google.com/citations?hl=en&user=9p5sBJ8AAAAJ&view_op=list_works&sortby=pubdate
- ResearchGate: https://www.researchgate.net/profile/Rohollah-Nasiri

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My current research focuses on developing tumor-on-a-chip models for preclinical radiation therapy research.

Teaching

COURSES

2023-24

- Microfluidics and Organ-on-a-chip in Biomedicine: BIOS 406 (Spr, Sum)

Publications

PUBLICATIONS

- **A lung tumor-on-a-chip model recapitulates the effect of hypoxia on radiotherapy response and FDG-PET imaging.** *Lab on a chip*
  Nasiri, R., Kurosu Jalil, M., Ibanez Gaspar, V., Flores Perez, A. S., Nguyen, H. T., Khan, S., Tang, S. K., Yang, Y. P., Pratx, G.
  2025
- **Organ-on-a-chip systems for modeling tumor and normal tissue microenvironments in radiotherapy research.** *Trends in biotechnology*
  Nasiri, R., Sankaranthi, A., Pratx, G.
  2025
- **Metabolic assessment of iPSC-derived neurons under ketone-enriched condition: Ketone sensor development and BHB-driven metabolic adaptation.** *iScience*
  Nasiri, R., Fayazbakhsh, F., Sanei, R., Wu, T., Taebnia, N., Habibey, R., Fotouhi, O., Cognetti, J., Lauschke, V. M., Russom, A., Herland, A.
  2026; 29 (5): 115702
- **Organ-on-a-chip systems for modeling tumor and normal tissue microenvironments in radiotherapy research** *TRENDS IN BIOTECHNOLOGY*
  Nasiri, R., Sankaranthi, A., Pratx, G.

2026; 44 (2): 333-350

- **Bidirectional Mechanical Stimulation Enables Biomechanical Coupling and Functional Maturation in Arterial Microphysiological Systems.** *Advanced healthcare materials*
  Kim, G., Jang, W., Lee, G., Ha, G., Batjargal, U., Park, S., Kim, M. S., Kang, R., Lee, T., Song, J., Lee, Y., Nasiri, R., Cho, et al
  2026: e05915
- **In vivo Positron Emission Particle Tracking (PEPT) of Single Cells Using an Expectation Maximization Algorithm.** *IEEE transactions on medical imaging*
  Nguyen, H. T., Das, N., Nasiri, R., Pratx, G.
  2025; PP
- **Engineering biomimetic tissue barrier models on chips: From design and fabrication to applications in disease modeling and drug screening.** *Biomaterials*
  Nasiri, R., Madadelahi, M., Nikmaneshi, M. R., Gokce, B., Bijarchi, M. A., Shah, S., Tirpáková, Z., Van Gastel, D., Taebnia, N., de Barros, N. R., Zhu, Y., Morcimen, Z. G., Gulicli, et al
  2025; 327: 123739
- **Electrochemical dual-sensing of lactate and glucose using NiO nanoparticles with cross-sensitivity calibration.** *Talanta*
  Nasiri, R., Guagliano, G., Van Gastel, D., Sanei, R., Madadelahi, M., Tanriverdi, S., Jain, S., Fayazbaksh, F., Lee, S. W., Zhu, Y., Joensson, H. N., Russom, A., Herland, et al
  2025; 297 (Pt B): 128678
- **A Lung Tumor-on-a-Chip Model Recapitulates the Effect of Hypoxia on Radiotherapy Response and FDG-PET Imaging.** *bioRxiv : the preprint server for biology*
  Nasiri, R., Jalil, M. K., Gaspar, V. I., Perez, A. S., Nguyen, H. T., Khan, S., Tang, S. K., Yang, Y. P., Pratx, G.
  2025
- **Modeling tumor-immune interactions using hybrid spheroids and microfluidic platforms for studying tumor-associated macrophage polarization in melanoma.** *Acta biomaterialia*
  Seo, J., Ha, G., Lee, G., Nasiri, R., Lee, J.
  2024
- **Engineered modular neuronal networks-on-chip represent structure-function relationship.** *Biosensors & bioelectronics*
  Habibey, R., Striebel, J., Meinert, M., Latiftikhereshki, R., Schmieder, F., Nasiri, R., Latifi, S.
  2024; 261: 116518
- **From animal testing to in vitro systems: advancing standardization in microphysiological systems.** *Lab on a chip*
  Reyes, D. R., Esch, M. B., Ewart, L., Nasiri, R., Herland, A., Sung, K., Piergiovanni, M., Lucchesi, C., Shoemaker, J. T., Vukasinovic, J., Nakae, H., Hickman, J., Pant, et al
  2024
- **Microfluidics and Organ-on-a-Chip for Disease Modeling and Drug Screening.** *Biosensors*
  Nasiri, R., Zhu, Y., de Barros, N. R.
  2024; 14 (2)
- **Engineered organoids for biomedical applications.** *Advanced drug delivery reviews*
  Roberto de Barros, N., Wang, C., Maity, S., Peirsman, A., Nasiri, R., Herland, A., Ermis, M., Kawakita, S., Gregatti Carvalho, B., Hosseinzadeh Kouchehbaghi, N., Donizetti Herculano, R., Tirpáková, Z., Mohammad Hossein Dabiri, et al
  2023: 115142
- **Rapid integration of screen-printed electrodes into thermoplastic organ-on-a-chip devices for real-time monitoring of trans-endothelial electrical resistance.** *Biomedical microdevices*
  Kawakita, S., Li, S., Nguyen, H. T., Maity, S., Haghniaz, R., Bahari, J., Yu, N., Mandal, K., Bandaru, P., Mou, L., Ermis, M., Khalil, E., Khosravi, et al
  2023; 25 (4): 37
- **Enhanced Maturation of 3D Bioprinted Skeletal Muscle Tissue Constructs Encapsulating Soluble Factor-Releasing Microparticles** *MACROMOLECULAR BIOSCIENCE*
  de Barros, N., Darabi, M., Ma, X., Diltemiz, S., Ermis, M., Najafabadi, A., Nadine, S., Banton, E. A. A., Mandal, K., Abbasgholizadeh, R., Falcone, N., Mano, J. F., Nasiri, et al
  2023: e2300276

- **Aerogel-Based Biomaterials for Biomedical Applications: From Fabrication Methods to Disease-Targeting Applications** *ADVANCED SCIENCE*
  Karamikamkar, S., Yalcintas, E., Haghniaz, R., de Barros, N., Mecwan, M., Nasiri, R., Davoodi, E., Nasrollahi, F., Erdem, A., Kang, H., Lee, J., Zhu, Y., Ahadian, et al
  2023: e2204681

- **Modelling Brain in a Chip** *JOURNAL OF CRANIOFACIAL SURGERY*
  Ashammakhi, N., Nasiri, R., Contag, C. H., Herland, A.
  2023; 34 (3): 845-847

- **Micromechanical property mismatch between pericellular and extracellular matrices regulates stem cell articular and hypertrophic chondrogenesis** *MATTER*
  Lee, J., Jeon, O., Koh, J., Kim, H., Lee, S., Zhu, Y., Song, J., Lee, Y., Nasiri, R., Lee, K., Bandaru, P., Cho, H., Zhang, et al
  2023; 6 (2)

- **Magnetically Driven Manipulation of Nonmagnetic Liquid Marbles: Billiards with Liquid Marbles** *MICROMACHINES*
  Azizian, P., Mohammadrashidi, M., Abbas Azimi, A., Bijarchi, M., Shafii, M., Nasiri, R.
  2023; 14 (1)

- **A Microfluidic Contact Lens to Address Contact Lens-Induced Dry Eye** *SMALL*
  Zhu, Y., Nasiri, R., Davoodi, E., Zhang, S., Saha, S., Linn, M., Jiang, L., Haghniaz, R., Hartel, M. C., Jucaud, V., Dokmeci, M. R., Herland, A., Toyserkani, et al
  2023; 19 (11): e2207017

- **The Effect of Non-Uniform Magnetic Field on the Efficiency of Mixing in Droplet-Based Microfluidics: A Numerical Investigation** *MICROMACHINES*
  Rezaeian, M., Nouri, M., Hassani-Gangaraj, M., Shamloo, A., Nasiri, R.
  2022; 13 (10)

- **Metabolic Assessment of Human Induced Pluripotent Stem Cells-Derived Astrocytes and Fetal Primary Astrocytes: Lactate and Glucose Turnover** *BIOSENSORS-BASEL*
  Matthiesen, I., Nasiri, R., Orrego, A., Winkler, T. E., Herland, A.
  2022; 12 (10)

- **Brain-on-a-chip: Recent advances in design and techniques for microfluidic models of the brain in health and disease** *BIOMATERIALS*
  Amirifar, L., Shamloo, A., Nasiri, R., de Barros, N., Wang, Z., Unluturk, B., Libanori, A., Ievglevskyi, O., Diltemiz, S., Sances, S., Balasingham, I., Seidlits, S. K., Ashammakhi, et al
  2022; 285: 121531

- **Droplet-based microfluidics in biomedical applications** *BIOFABRICATION*
  Amirifar, L., Besanjideh, M., Nasiri, R., Shamloo, A., Nasrollahi, F., de Barros, N., Davoodi, E., Erdem, A., Mahmoodi, M., Hosseini, V., Montazerian, H., Jahangiry, J., Darabi, et al
  2022; 14 (2)

- **Additively manufactured metallic biomaterials** *BIOACTIVE MATERIALS*
  Davoodi, E., Montazerian, H., Mirhakimi, A., Zhianmanesh, M., Ibhadode, O., Shahabad, S., Esmaeilizadeh, R., Sarikhani, E., Toorandaz, S., Sarabi, S. A., Nasiri, R., Zhu, Y., Kadkhodapour, et al
  2022; 15: 214-249

- **Advanced Materials and Sensors for Microphysiological Systems: Focus on Electronic and Electrooptical Interfaces** *ADVANCED MATERIALS*
  Kavand, H., Nasiri, R., Herland, A.
  2022; 34 (17): e2107876

- **Design of two Inertial-based microfluidic devices for cancer cell separation from Blood: A serpentine inertial device and an integrated inertial and magnetophoretic device** *CHEMICAL ENGINEERING SCIENCE*
  Nasiri, R., Shamloo, A., Akbari, J.
  2022; 252

- **Assessing the aneurysm occlusion efficacy of a shear-thinning biomaterial in a 3D-printed model.** *Journal of the mechanical behavior of biomedical materials*

Schroeder, G., Edalati, M., Tom, G., Kuntjoro, N., Gutin, M., Gurian, M., Cuniberto, E., Hirth, E., Martiri, A., Sposato, M. T., Aminzadeh, S., Eichenbaum, J., Alizadeh, et al
2022; 130: 105156

- **Three-dimensional transistor arrays for intra- and inter-cellular recording** *NATURE NANOTECHNOLOGY*
  Gu, Y., Wang, C., Kim, N., Zhang, J., Wang, T., Stowe, J., Nasiri, R., Li, J., Zhang, D., Yang, A., Hsu, L., Dai, X., Mu, et al
  2022; 17 (3): 292-+

- **Recent developments in mussel-inspired materials for biomedical applications** *BIOMATERIALS SCIENCE*
  Barros, N., Chen, Y., Hosseini, V., Wang, W., Nasiri, R., Mahmoodi, M., Yalcintas, E., Haghniaz, R., Mecwan, M., Karamikamkar, S., Dai, W., Sarabi, S. A., Falcone, et al
  2021; 9 (20): 6653-6672

- **Design of a Hybrid Inertial and Magnetophoretic Microfluidic Device for CTCs Separation from Blood** *MICROMACHINES*
  Nasiri, R., Shamloo, A., Akbari, J.
  2021; 12 (8)

- **Bioengineered Multicellular Liver Microtissues for Modeling Advanced Hepatic Fibrosis Driven Through Non-Alcoholic Fatty Liver Disease** *SMALL*
  Cho, H., Kim, H., Lee, K., Lasli, S., Ung, A., Hoffman, T., Nasiri, R., Bandaru, P., Ahadian, S., Dokmeci, M. R., Lee, J., Khademhosseini, A.
  2021; 17 (14): e2007425

- **Healthy and diseased in vitro models of vascular systems** *LAB ON A CHIP*
  Hosseini, V., Mallone, A., Nasrollahi, F., Ostrovidov, S., Nasiri, R., Mahmoodi, M., Haghniaz, R., Baidya, A., Salek, M., Darabi, M., Orive, G., Shamloo, A., Dokmeci, et al
  2021; 21 (4): 641-659

- **Microengineered poly(HEMA) hydrogels for wearable contact lens biosensing** *LAB ON A CHIP*
  Chen, Y., Zhang, S., Cui, Q., Ni, J., Wang, X., Cheng, X., Alem, H., Tebon, P., Xu, C., Guo, C., Nasiri, R., Moreddu, R., Yetisen, et al
  2020; 20 (22): 4205-4214

- **Gut-on-a-chip: Current progress and future opportunities** *BIOMATERIALS*
  Ashammakhi, N., Nasiri, R., de Barros, N., Tebon, P., Thakor, J., Goudie, M., Shamloo, A., Martin, M. G., Khademhosseini, A.
  2020; 255: 120196

- **Combined Effects of Electric Stimulation and Microgrooves in Cardiac Tissue-on-a-Chip for Drug Screening** *SMALL METHODS*
  Ren, L., Zhou, X., Nasiri, R., Fang, J., Jiang, X., Wang, C., Qu, M., Ling, H., Chen, Y., Xue, Y., Hartel, M. C., Tebon, P., Zhang, et al
  2020; 4 (10)

- **Type V Collagen in Scar Tissue Regulates the Size of Scar after Heart Injury** *CELL*
  Yokota, T., McCourt, J., Ma, F., Ren, S., Li, S., Kim, T., Kurmangaliyev, Y. Z., Nasiri, R., Ahadian, S., Thang Nguyen, Tan, X., Zhou, Y., Wu, R., et al
  2020; 182 (3): 545-+

- **Design and Simulation of an Integrated Centrifugal Microfluidic Device for CTCs Separation and Cell Lysis** *MICROMACHINES*
  Nasiri, R., Shamloo, A., Akbari, J., Tebon, P., Dokmeci, M. R., Ahadian, S.
  2020; 11 (7)

- **3D Bioprinting of Oxygenated Cell-Laden Gelatin Methacryloyl Constructs** *ADVANCED HEALTHCARE MATERIALS*
  Erdem, A., Darabi, M., Nasiri, R., Sangabathuni, S., Ertas, Y., Alem, H., Hosseini, V., Shamloo, A., Nasr, A. S., Ahadian, S., Dokmeci, M. R., Khademhosseini, A., Ashammakhi, et al
  2020; 9 (15): e1901794

- **Microfluidic-Based Approaches in Targeted Cell/Particle Separation Based on Physical Properties: Fundamentals and Applications** *SMALL*
  Nasiri, R., Shamloo, A., Ahadian, S., Amirifar, L., Akbari, J., Goudie, M. J., Lee, K., Ashammakhi, N., Dokmeci, M. R., Di Carlo, D., Khademhosseini, A.
  2020; 16 (29): e2000171

- **Enhancement of label-free biosensing of cardiac troponin I**
  Christenson, C., Baryeh, K., Ahadian, S., Nasiri, R., Dokmeci, M. R., Goudie, M., Khademhosseini, A., Ye, J.
  edited by Shaked, N. T., Hayden, O.
  SPIE-INT SOC OPTICAL ENGINEERING.2020

- **Micro and nanoscale technologies in oral drug delivery** *ADVANCED DRUG DELIVERY REVIEWS*
  Ahadian, S., Finbloom, J. A., Mofidfar, M., Diltemiz, S., Nasrollahi, F., Davoodi, E., Hosseini, V., Mylonaki, I., Sangabathuni, S., Montazerian, H., Fetah, K., Nasiri, R., Dokmeci, et al
  2020; 157: 37-62

- **Three-Dimensional Bioprinting of Functional Skeletal Muscle Tissue Using Gelatin Methacryloyl-Alginate Bioinks** *MICROMACHINES*
  Seyedmahmoud, R., Celebi-Saltik, B., Barros, N., Nasiri, R., Banton, E., Shamloo, A., Ashammakhi, N., Dokmeci, M., Ahadian, S.
  2019; 10 (10)

- **Exploring contraction-expansion inertial microfluidic-based particle separation devices integrated with curved channels** *AICHE JOURNAL*
  Shamloo, A., Abdorahimzadeh, S., Nasiri, R.
  2019; 65 (11)

- **The emergence of 3D bioprinting in organ-on-chip systems** *PROGRESS IN BIOMEDICAL ENGINEERING*
  Fetah, K., Tebon, P., Goudie, M. J., Eichenbaum, J., Ren, L., Barros, N., Nasiri, R., Ahadian, S., Ashammakhi, N., Dokmeci, M. R., Khademhosseini, A.
  2019; 1 (1)

- **Bioinks and bioprinting technologies to make heterogeneous and biomimetic tissue constructs** *MATERIALS TODAY BIO*
  Ashammakhi, N., Ahadian, S., Xu, C., Montazerian, H., Ko, H., Nasiri, R., Barros, N., Khademhosseini, A.
  2019; 1: 100008