Vida Jamali

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School of Chemical and Biomolecular Engineering
Atlanta, GA, 30332

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Academic Position

Georgia Institute of Technology Aug 2022-present
School of Chemical and Biomolecular Engineering, *Assistant Professor and Spencer Faculty Fellow*
Institute for Matter and Systems, *Affiliated Faculty*
Institute for Data Engineering and Science, *Affiliated Faculty*
Institute for BioEngineering and Biosciences, *Affiliated Faculty*
Machine learning PhD Program, *Program Faculty*
Bioengineering PhD Program, *Program Faculty*

University of California, Berkeley Dec 2017-Aug 2022
Department of Chemistry, Kavli Energy NanoScience Institute, Postdoctoral Researcher
Advisor: **A. Paul Alivisatos and Kranthi Mandadapu**

Education

Rice University, Houston, TX 2017
Ph.D. in Chemical and Biomolecular Engineering
Advisor: **Matteo Pasquali**
Thesis: Morphology of Carbon Nanotube Liquid Crystalline Solutions: Insights into Tactoids and Columnar Phase
Committee: Paul van der Schoot, S. Lisa Biswal, Fred C. MacKintosh

Sharif University of Technology, Tehran, Iran 2011
B.Sc. in Chemical Engineering

Honors and Awards

Beckman Young Investigator Award Finalist (2025)
NSF CAREER Award (2024)
ACS Petroleum Research Fund, Doctoral New Investigator Award (2023)
Scialog Fellow, Automating Chemical Labs, Research Corporation for Science Advancement (2023)
AI for Chemical and Materials Discovery Initiative Lead, Georgia Tech (2023)
35 Voices of Chemistry of Materials (2023)
Rising Stars in Soft and Biological Matter, selected by the University of Chicago MRSEC (2021)
Berkeley Postdoctoral Association Professional Development Award (2021)
AIChE Women In Chemical Engineering Travel Award (2020)
Princeton University and University of Delaware Future Faculty in Soft Matter Workshop (2019)
American Chemical Society P2F Future Faculty Scholar (2019)
Society of Rheology Student Travel Award (2017)
Active and Smart Matter Conference Travel Award (2016)
Smalley-Curl Institute Travel Award (2016): Annual SCI Transdisciplinary Symposium
Society of Iranian-American Women for Education (SIAWE) Scholarship (2016)
ConocoPhillips Endowed Scholarship (2014)
Phi Lambda Upsilon Honor Society (2014)
NASA Space Health Innovation Challenge hackathon Finalist (2013): Awarded and organized by NASA
Ignite Silicon Valley Trek Travel Award (2013): Rice Alliance for Technology and Entrepreneurship
Best Teaching Assistant Award (2012): Department of Chemical and Biomolecular engineering
Screech Elevator Pitch Competition People's Choice Award (2012): Rice Center for Engineering Leadership

Publications (* denotes equal contribution, † denotes corresponding author)

- Shabeeb, Z.*, Saeedi, D.*, Tsui, D.*, **Jamali, V.**†, Aghazadeh, A.†," cryoSENSE: Compressive Sensing Enables High-throughput Microscopy with Sparse and Generative Priors on the Protein Cryo-EM Image Manifold". arXiv:2511.12931 (2025). Website: https://cryosense.github.io

- Housley S., N.†, Bourque, A.R., Matyunina, L.V., Panicker, I.A., Schrader Echeverri, E., Izykowicz, M., Herrmann, O.A., Lee, S., Arboleda, J.C., **Jamali, V.**, McDonald, J.F., Dahlman, J. E., Finn, M.G.,"Tumor Agnostic Drug Delivery with Dynamic Nanohydrogels". Nature Communications (2025), *In print.*

- Shabeeb, Z., Goyal, N., Attah Nantogmah, P., **Jamali, V.**†,"Learning the Diffusion of Nanoparticles in Liquid Phase TEM via a Physics-informed Generative AI". Nature Communications, 16, 6298 (2025).

- Shabeeb, Z., **Jamali, V.**†,"LEONARDO: A Physics-Informed Generative Model for Stochastic Nanoparticle Dynamics in Liquid-Phase TEM". Neural Information Processing Systems, AI for Science Workshop (2025).

- Wang*, A., Xu*, M., Goel, R., Shabeeb, Z., Panicker, I. A., **Jamali, V.**†, "SAM-EM: Real-Time Segmentation for Automated Liquid Phase Transmission Electron Microscopy", Neural Information Processing Systems, AI for Accelerated Materials Design Workshop (2025).

- Panicker I.A., Shabeeb, Z., Hargus, C., **Jamali, V.**†,"Modulating Nanoparticle-Surface Interactions at Liquid-Solid Interfaces via Ion Screening in Liquid-Phase TEM". ChemRxiv (2025), *Under Review.*

- Shabeeb, Z., Goyal, N., Attah Nantogmah, P. **Jamali, V.**†,"Learning the Physics of Liquid Phase TEM Nanoparticle Trajectories Using Physics-Informed Generative AI". *Microscopy and Microanalysis* 30, S1, 1724 (2024).

- Shabeeb, Z., Goyal, N., **Jamali, V.**†, "Determining Diffusion Characteristics of Nanoparticles in Liquid Phase TEM Using Deep Learning". *Microscopy and Microanalysis* 30, S1, 2074 (2024).

- **Jamali, V.**†, Alivisatos, A. P.†, "Studying Diffusion of Colloidal Nanoparticles in Solution Using Liquid Phase TEM and Machine Learning". *Microscopy and Microanalysis* 28, 142 - 143 (2022).

- Moreno-Hernandez, I. A.*, Crook, M. F.,* **Jamali, V.***, Alivisatos, A. P., "Recent advances in the study of colloidal nanocrystals enabled by in situ liquid phase transmission electron microscopy". *MRS Bulletin* 47, (2022).

- Abbas, A., Vargo, E., **Jamali, V.**, Ercius, P., Pieters, P., Brinn, R., Ben-Moshe, A., Cho, M., Xu, T., Alivisatos, A. P. "Observation of an Orientational Glass in a Superlattice of Elliptically-Faceted CdSe Nanocrystals". *ACS Nano* (2022).

- **Jamali, V.**, Hargus, C., Ben Moshe A., Aghazadeh, A., Ha, H. D., Mandadapu, K. K., Alivisatos, A. P. "Deep Learning-assisted Liquid Cell Electron Microscopy Reveals the Nature of Anomalous Diffusion of Nanoparticles Near the Surface". *Proceedings of National Academy of Sciences (PNAS)* 118 (10) (2021).

- **Jamali, V.**, Mirri, F., Biggers, E. G., Pinnick, R.A., Liberman, L., Cohen, Y., Talmon, Y., MacKintosh F., van der Schoot, P., Pasquali, M. "Enhanced ordering in length-polydisperse carbon nanotube solutions at high concentrations as revealed by the small angle X-ray scattering". *Soft Matter* 17, 5122-5130 (2021).

  Featured on the front cover of Soft Matter, Issue 20.

- Cho, H., Moreno-Hernandez, I., **Jamali, V.**, Oh, M., Alivisatos, A. P. "In situ quantification of interactions between charged nanorods in a predefined potential energy landscape". *Nano Letters* 21 (1), 628-633 (2021).

- **Jamali, V.***, Niroui, F.*, Taylor, L. W., Dewey, O. S., Koscher, B. A., Pasquali, M., Alivisatos, A. P. "Perovskite-Carbon Nanotube Light Emitting Fibers". *Nano Letters* 20 (5), 3178-3184 (2020).

- Liberman, L., **Jamali, V.**, Pasquali, M., Talmon, Y. "The effect of carbon nanotube diameter and stiffness on their phase behavior in crowded solutions". *Langmuir* 36 (1), 242-249 (2020).

- Mirri, F.*, Ashkar, R.*, **Jamali, V.**, Liberman, L., Pinnick, R., Talmon, Y., van der Schoot, P., Butler, P., Pasquali, M. "Quantification of carbon nanotube liquid crystal morphology via neutron scattering". *Macromolecules* 51 (17), 6892-6900 (2018).

- Maillaud, L., Headrick, R. J., **Jamali, V.**, Maillaud, J., Tsentalovich, D., Neri, W., Bengio, E. A., Mirri, F., Kleinerman, O., Talmon, Y., Poulin, P., and Pasquali, M., "Flexible and conductive fibers made from highly concentrated aqueous dispersions of carbon nanotubes". *Industrial and Engineering Chemistry Research* 57 (10), 3554-3560 (2018).

- Tran, T. Q., Headrick, R. J., Bengio, E. A., Myint, S. M., Khoshnevis, H., **Jamali, V.**, Duong, H. M., Pasquali, M. "Purification and dissolution of carbon nanotube fibers spun from floating catalyst method". *ACS Materials and Interfaces* 9 (42), 37112-37119 (2017).
- **Jamali, V.**, Biggers, E., van der Schoot, P., Pasquali, M. "Line tension of twist-free carbon nanotube lyotropic liquid crystal microdroplets on solid surfaces". *Langmuir* 33 (36), 9115-9121 (2017).
- Jiang, C., Peng, Z., de los Reyes, C., Young, C. C., Tsentalovich, D., **Jamali, V.**, Ajayan, P. M., Tour, J. M., Pasquali, M., and Marti A. A., "Increased solubility and fiber spinning of graphenide dispersions aided by crown-ethers". *Chemical Communications* 53 (9), 1498-1501 (2016).
- **Jamali, V.***, Behabtu, N.*, Senyuk, B., Lee J. A. Smalyukh, I., van der Schoot, P., Pasquali, M. "Experimental realization of crossover in shape and director field of nematic tactoids". *Physical Review E* 91 (4), 042507 (2015).

Manuscripts In Preparation

- Requejo Roque, K., Cañari-Chumpitaz, C., **Jamali, V.**, Ruiz, R., Alivisatos, A. P., Bustamante, C. "Quantifying photochemical propulsion in light-powered Janus micromotors". Submitted-Draft available upon request.

Patents

Alivisatos A.P., Niroui, F., Jamali, V., Pasquali M., "Light emitting fibers", USSN 62/714,561
Alivisatos A.P., Jamali, V., "Processing method for fabricating perovskite-carbon nanotube fibers and devices", USSN 62/958,394

Selected Talks and Presentations

AI-Driven Electron Microscopy for Visualizing Nanoscale Dynamics in Liquid (Invited)
University of California, Santa Barbara, CA. Dec 2025

AI for Anomalous Diffusion: From Classification to Generative Modeling of Stochastic Transport at the Nanoscale
Potsdam University, Potsdam, Germany (Invited, Virtual). Oct 2025

Liquid phase transmission electron microscopy for investigating multiscale dynamics of biomolecular systems
1st SouthEast Amyloid-CONdensate (SEACON) symposium, Ocean Springs, MS. Aug 2025

AI-enabled single particle tracking in liquid-phase transmission electron microscopy
ACS Colloid & Surface Science Symposium, Alberta, Canada. Jun 2025

Imaging, Learning, and Engineering of Nanoscale Dynamics via Liquid Phase TEM (Invited)
MRS Spring Meeting, Seattle, WA. Apr 2025

Learning the Diffusion of Nanoparticles in Liquid Phase TEM Using Physics-Informed Generative AI
AIChE Fall Meeting, San Diego, CA. Oct 2024

Imaging, Learning, and Engineering of Nanoparticles' Dynamics using Liquid Phase Transmission Electron Microscopy
Institute for Electronics and Nanotechnology, Georgia Tech, Atlanta, GA. Mar 2024

Deep generative neural networks for learning the dynamics of nanoparticles in liquid phase electron microscopy
APS March Meeting, Minneapolis, MN. Mar 2024

Imaging, learning, and engineering of nanoparticles' dynamics using liquid phase TEM (Invited)
Institute for Electronics and Nanotechnology, Georgia Tech, Atlanta, GA. Mar 2024

Using deep learning to elucidate the dynamics of nanoparticles in liquid phase TEM (Invited)
International Microscopy Congress IMC20, Busan, Korea. Sep 2023

Deep Learning-Assisted Analysis of Anomalous Nanoparticle Surface Diffusion in Liquid Phase TEM (Invited)
2023 Institute for Materials Symposium on Materials Innovations, Atlanta, GA. Mar 2023

Deep Learning-Assisted Analysis of Anomalous Nanoparticle Surface Diffusion in Liquid Phase TEM (Invited)
CCMST, Machine Learning in Chemistry Seminar, GeorgiaTech, Atlanta, GA. Mar 2023

Deep Learning-Assisted Analysis of Anomalous Nanoparticle Surface Diffusion in Liquid Phase TEM (Invited)
LPTEM Gordon Research Conference, Ventura, CA. Oct 2022

Studying diffusion of colloidal nanoparticles in solution using liquid phase TEM and machine learning (Invited)
Microscopy and Microanalysis Conference, Portland, OR. Aug 2022

Imaging, learning, and engineering of soft matter systems at the nanoscale (Invited)
University of Southern California, Department of Chemical Engineering and Materials Science, Los Angeles, CA. Mar 2022
Massachusetts Institute of Technology, Department of Chemical Engineering, Cambridge, MA. Feb 2022
Brandeis University, MRSEC, Waltham, MA. Feb 2022
University of Minnesota, Department of Chemical Engineering and Materials Science, Minneapolis, MN. Feb 2022
University of Wisconsin-Madison, Department of Chemistry, Madison, WI. Feb 2022
University of California, Los Angeles, Department of Chemistry and Biochemistry, Los Angeles, CA. Feb 2022
Yale University, Department of Chemical and Environmental Engineering, New Heaven, NH. Feb 2022
Cornell University, Department of Chemistry and Chemical Biology, Ithaca, NY. Jan 2022
Princeton University, Department of Chemical and Biological Engineering, Princeton, NJ. Jan 2022
Georgia Institute of Technology, School of Chemical and Biomolecular Engineering, Atlanta, GA. Jan 2022
University of California, Berkeley, Kavli Energy NanoScience Institute, Berkeley, CA. Dec 2021

Deep Learning-Assisted Analysis of Anomalous Nanoparticle Surface Diffusion in Liquid Phase TEM
AIChE Annual Meeting, Boston, MA. Nov 2021

Imaging, learning, and engineering of complex soft matter systems at the nanoscale
Rising Stars in Soft and Biological Matter Symposium, University of Chicago MRSEC (virtual). Sep 2021

Deep learning-assisted analysis of anomalous nanoparticle surface diffusion in liquid phase TEM (invited)
University of California Berkeley, Nano Seminar Series, Berkeley, CA. Sep 2021

Imaging, learning, and engineering of complex soft matter systems at the nanoscale (Invited)
Seagate Normandale AI/ML Distinguished Seminar Series, Bloomington, MN (virtual). Jul 2021

Deep learning-assisted analysis of anomalous nanoparticle surface diffusion in liquid phase TEM
ACS Colloid & Surface Science Symposium (virtual). Jun 2021

Imaging, learning, and engineering of complex soft matter systems at the nanoscale
Department of Chemical and Biomolecular Engineering, Johns Hopkins University, MD (virtual). Feb 2021
Department of Chemical Engineering, Texas A&M University, TX (virtual). Feb 2021
Department of Chemical and Biomolecular Engineering, University of Notre Dame, IN (virtual). Jan 2021

Deep learning-assisted analysis of anomalous nanoparticle diffusion near the liquid cell surface reveals the effect of electron beam dose rate in TEM
AIChE Annual Meeting, Boston, MA. Nov 2021

Deep learning-assisted analysis of anomalous nanoparticle diffusion near the liquid cell surface reveals the effect of electron beam dose rate in TEM
APS March Meeting (virtual). Mar 2021

In-situ liquid phase electron microscopy for studying the dynamics of colloidal nanoparticles at the nanoscale
AIChE Annual Meeting, San Francisco, CA (virtual, available online). Nov 2020

From nanoscale building blocks to functional fibers
AIChE Annual Meeting, Orlando, FL. Nov 2019

From carbon nanotube liquid crystalline solutions to functional fibers (Invited)
Department of Materials Science and Engineering, Cornell University, Ithaca, NY. Feb 2019
Department of Physics, Physics of Living Systems, MIT, Cambridge, MA. Nov 2018

Colloidally synthesized nanomaterials as building blocks for functional fibers
MRS Fall Meeting, Boston, MA. Nov 2018

From carbon nanotube liquid crystalline solutions to functional fibers
AIChE Annual Meeting, Pittsburgh, PA. Oct 2018

Morphology of carbon nanotube liquid crystalline phases: insight into tactoids and columnar phase (Invited)
APS March Meeting, Los Angeles, CA. Mar 2018

A hexagonal columnar liquid crystal phase formation in dilute solutions of carbon nanotubes
AIChE Annual Meeting, Minneapolis, MN. Oct 2017

Phase behavior and morphology of carbon nanotube liquid crystal solutions
88th Society of Rheology Conference, Tampa, FL. Feb 2017

Phase behavior and morphology of carbon nanotube liquid crystal solutions (Invited)
Lewis-Sigler Integrative Genome Institute, Biophysics group, Princeton, NJ. Feb 2017

Morphology of carbon nanotube liquid crystal solutions
AIChE Annual Meeting, San Francisco, CA. Nov 2016

Wetting behavior, shape, and morphology of sessile lyotropic liquid crystal microdroplets
ACS Colloid & Surface Science Symposium, Harvard University, Cambridge, MA. Jun 2016
Wetting behavior, shape, and morphology of sessile lyotropic liquid crystal microdroplets (Poster)
Active and Smart Matter Conference, Syracuse University, Syracuse, NY. Jun 2016

Experimental realization of crossover in shape and director field of nematic tactoids (Poster)
Soft Condensed Matter Physics Gordon Research Conference, New London, NH Aug 2015

Experimental realization of crossover in shape and director field of nematic tactoids
ACS Colloid & Surface Science Symposium, Carnegie Mellon University, Pittsburg, PA. Jun 2015

Graduate Research Trainees

Zain Shabeeb, PhD Candidate, Georgia Institute of Technology CHBE 2022-present
Isabel Panicker, PhD Student, Georgia Institute of Technology CHBE 2023-present
Brian Chettle, PhD Student, Georgia Institute of Technology CHBE 2024-present
Yuling Zheng, PhD Student, Georgia Institute of Technology BioE 2025-present

Undergraduate Research Trainees

Diya Mahesh, Georgia Tech CHBE 2025-present
Riya Patel, Georgia Tech CHBE 2025-present
Anika Patel, Georgia Tech CS 2025-present
Siddarth Sreeram, Georgia Tech CE 2025-present
Madison Tat, Georgia Tech, CHBE, Presidential Undergraduate Research Awardee 2025-present
Alexander Wang, Georgia Tech CS 2025
Max Xu, Georgia Tech CS 2025
Lauren Caldwell, Georgia Tech CHBE 2024-present
Isabella Fianco, Georgia Tech CHBE 2024-2025

Cecilia Reed, Georgia Tech CHBE	2023-2025
Laurence Lines, Georgia Tech CHBE	2024-2025
Risha Goel, Georgia Tech CHBE, Presidential Undergraduate Research Awardee	2024-2025
Naisargi Goyal, Georgia Tech CHBE, Presidential Undergraduate Research Awardee	2022-2024
Gabriel Joaquim Sampaio De Almeida, Georgia Tech CHBE	2023
Arko Roy, Georgia Tech CHBE	2023
Tanner Yamada, University of California, Berkeley CBE	2018-2019
Evan Biggers, Rice University CHBE	2016-2017
Miranda Mittleman, Rice University, High School Summer Intern	Summer 2017
Samuel Quitzau, Rice University NSF-REU Program	2016-2017

Teaching Experience

Instructor: AI in ChBE Experimentalists (Exp-AI) (CHBE 4803/6803) Georgia Institute of Technology	Spring 2025
Instructor: Fluid Mechanics (CHBE 3205) Georgia Institute of Technology	Spring 2024, Fall 2024, Fall 2025
Instructor: Transport Phenomena (CHBE 3200) Georgia Institute of Technology	Fall 2022, Fall 2023
Dean's Teaching Assistant: Thermodynamics I (CHBE 411) Rice University	Fall 2014
Teaching Assistant: Colloidal & Interfacial Phenomena (CHBE 560) Rice University	Spring 2014
Teaching Assistant: Transport Phenomena I (CHBE 401) Rice University	Fall 2012
Teaching Assistant: Chemical Engineering Lab II (CHBE 433) Rice University	Fall 2011

Press

Phys.org: New AI Tool Deciphers Mysteries of Nanoparticle Motion in Liquid Environments (07/15/2025)
Georgia Tech: New AI Tool Deciphers Mysteries of Nanoparticle Motion in Liquid Environments (07/11/2025)
Rice University: Molecular jiggling has implications for carbon nanotube fibers (05/31/2021)
Phys.org: Molecular jiggling has implications for carbon nanotube fibers (05/31/2021)
Phys.org: Researchers advance characterization, purification of nanotube wires and films (10/16/2017)
EurekaAlert: Long nanotubes make strong fibers (10/16/2017)
MaterialsToday: Scientists explore ways to produce high-quality fibers from carbon nanotubes (11/10/2017)

Service to Scientific Community

Panelist, NextProf Nexus Program, Preparing the next generation of scientific and technological leaders, AIChE GT chapter, Women in ChemE	2023
Guest Editor, Journal of Visualized Experiments	2022-present
Peer Review *Science, Science Advances, ACS Applied Electronic Materials, Journal of Rheology, ACS Nano, Nanoscale Soft Matter, Physical Chemistry Chemical Physics, PRX Life, PRE, Neurips AI4Mat, ICML AI4Mat*	
Review Panel, NSF CAREER, CBET, Bioimaging and Biophotonics Programs	
Facility Advisory Committee, Institute for Matter and Systems, Georgia Tech, Atlanta, GA	2024-present
Faculty Search Committee, School of ChBE, Georgia Tech	2025-present
Seminar Organization Committee, School of ChBE, Georgia Tech	2022-2025
Graduate Admission Committee, School of ChBE, Georgia Tech	2024-2025
Graduate Recruitment Committee, School of ChBE, Georgia Tech	2022-2024
Session Organizer and Chair, AIChE Fall meeting, Nanoscale Science and Engineering Forum	2024, 2025
Symposium Organizer, Southeast Soft Matter Day Symposium, Atlanta, GA	2024

Undergraduate Faculty Advisor, Sophomores, Georgia Tech CHBE	2023-present
BioE Day Thesis Competition Judge, Georgia Tech	2023
Workshop presenter, STEM GEM, Atlanta, GA	2023
Postdoc representative, Chemistry Graduate Life Committee, UC Berkeley, CA	2019-2020
Authorized superuser, Alivisatos lab small angle X-ray scattering facility	2018-2022
Session co-chair, AIChE Conference	2017
Recitation chair, CHBE graduate student association, Rice University	2013-2014
Workshop presenter, Sally Ride Science Festival for Girls, Houston, TX	2012 & 2013