

# Vida Jamali

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## Academic Position

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### Georgia Institute of Technology

School of Chemical and Biomolecular Engineering, Assistant Professor

Aug 2022-present

### University of California, Berkeley

Department of Chemistry, Kavli Energy NanoScience Institute, Postdoctoral Researcher  
Advisor: **A. Paul Alivisatos** (joint with Kranthi Mandadapu)

Dec 2017-Aug 2022

## Education

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### Rice University, Houston, TX

Ph.D. in Chemical and Biomolecular Engineering, GPA: 4.03/4

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

2017

### Sharif University of Technology, Tehran, Iran

B.Sc. in Chemical Engineering

2011

## Honors and Awards

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**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

## Peer Reviewed Publications (\* denotes equal contribution, † denotes corresponding author)

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- **Jamali, V.†**, Alivisatos, A. P.†, "Recent advances in the study of colloidal nanocrystals enabled by in situ liquid phase transmission electron microscopy". *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

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- Aikawa, A.\*, **Jamali, V.\***, Tang, E., Liou, F., Tsai, H. Z., Alivisatos, A. P., Crommie, M. “Tunable ergodicity of molecular adsorbates on moire superlattices with substrate energy landscape engineering”. In preparation-Draft available upon request.

## Grant Proposals Writing Experience

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NSF-CBET, lead writer, funded for \$156k (PI: A. Paul Alivisatos, Co-PI: Kranthi Mandadapu)	June 2020
EAGER: Towards molecular scale resolution in studies of the anomalous motion of nanoparticles using liquid phase EM	
NSF-DMR co-writer, later used as the basis for a successful Welch foundation proposal (PI: Matteo Pasquali, Co-PIs: Fred MacKintosh, Yeshahayu Talmon)	Nov 2016
Nanotube-based soft conductors with tunable mechanical properties	
AFRL/AFOSR co-writer, funded for \$800k (PI: Matteo Pasquali)	Oct 2014
Soft, lightweight, multi-functional conductors from fullerene carbon nanotubes	

## Patents

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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

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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, Minneapolis, MN.	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 Haven, 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
 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 American Physical Society (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 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, Pittsburgh, PA.	Jun 2015

## Mentoring Experience

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Graduate student: Andrew Aikawa (PHYS) (University of California, Berkeley)	2020-2022
Graduate student: Abdullah Abbas (MSE) (University of California, Berkeley)	2020-2022
Undergraduate student: Tanner Yamada (CBE) (University of California, Berkeley)	2018-2019
Undergraduate student: Evan Biggers (CHBE) (Rice University)	2016-2017
High School Summer Intern: Miranda Mittleman (Rice University)	Summer 2017
Undergraduate Summer Intern: Samuel Quitzau (NSF REU program)	Summer 2016
First-Year CHBE Graduate Students Mentor (Rice University)	2015-2016

## Teaching Experience

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<i>Instructor:</i> Transport Phenomena (CHBE 3200) Georgia Institute of Technology	Fall 2022
<i>Dean's Teaching Assistant:</i> Thermodynamics I (CHBE 411) Rice University	Fall 2014
<i>Teaching Assistant:</i> Colloidal & Interfacial Phenomena (CHBE 560) Rice University	Spring 2014
<i>Teaching Assistant:</i> Transport Phenomena I (CHBE 401) Rice University	Fall 2012
<i>Teaching Assistant:</i> Chemical Engineering Lab II (CHBE 433) Rice University	Fall 2011

## Press

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**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)

## Professional Affiliations

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American Institute of Chemical Engineers, American Chemical Society, Materials Research Society, American Physical Society (GSOFT), Society of Rheology

## Services and Outreach

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### Peer Review

*Science Advances, ACS Applied Electronic Materials, Journal of Rheology, Physical Chemistry Chemical Physics, Graduate Women in Science Fellowship*

Postdoc representative, Chemistry Graduate Life Committee, UC, Berkeley, CA 2019-2020

Authorized superuser, Alvisatos lab small angle X-ray scattering facility 2018-2022

Session co-chair, AIChE Conference 2017

Authorized superuser, Rice optical microscopy shared facility 2014-2017

Recitation chair, CHBE graduate student association, Rice University 2013-2014

Workshop presenter, Sally Ride Science Festival for Girls, Houston, TX 2012 & 2013