

# Vida Jamali

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## Academic Position

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### University of California, Berkeley

2018-present

Department of Chemistry, Kavli Energy NanoScience Institute, Postdoctoral Researcher  
Advisor: **A. Paul Alivisatos**

## Education

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### Rice University, Houston, TX

2011-2017

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

### Sharif University of Technology, Tehran, Iran

2006- 2011

B.S. in Chemical Engineering

## Research Interests

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I use experimental, theoretical, and computational tools such as liquid cell transmission electron microscopy, rheology, statistical and colloidal thermodynamics, and artificial intelligence to study the structure and dynamics of nanostructured complex soft matter systems.

## Honors and Awards

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**Berkeley Postdoctoral Association Professional Development Award (2021)**

**AIChE Women In Chemical Engineering Travel Award (2020)**

**National Postdoctoral Appreciation Week Spotlight: College of Chemistry, UC Berkeley (2020)**

**Selected to attend the University of Delaware Future Faculty Workshop, Princeton University (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)

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1. **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).
  2. **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.*

3. 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).
4. **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).
5. 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).
6. Mirri, F.\*, Ashkar, R.\*, **Jamali, V.**, Liberman, L., Pinnick, R., Talmon, Y., van der Schoot, P., Butler, P., Pasquali, M. “Fluid phase ordering of charge-stabilized carbon nanotube solutions”. *Macromolecules* 51 (17), 6892-6900 (2018).
7. 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).
8. 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).
9. **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).
10. 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).
11. **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).

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## Manuscript in preparation

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12. Abbas, A. S., Vargo, E., **Jamali, V.**, Pieters, P., Ben-Moshe, A., Cho, M. G., Xu, T., Alivisatos, A. P. “Observation of an Orientational Glass in a Superlattice of Anisotropic Shaped CdSe Nanocrystals”. In preparation-Draft available upon request.
13. Alivisatos, A. P., Crook, M. F., **Jamali, V.**, Moreno-Hernandez, I. A., “Recent Advances in the Study of Colloidal Nanocrystals Enabled by In Situ Liquid Cell Transmission Electron Microscopy”. In preparation-Draft available upon request.
14. Aikawa, A., **Jamali, V.**, Liou, F., Tsai, H. Z., Tang, E., Alivisatos, A. P., Crommie, M. “Tunable ergodicity of adsorbates on graphene with substrate potential landscape engineering”. In preparation.

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## 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 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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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 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 Materials Science and Engineering, Cornell University, Ithaca, NY.	Feb 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, Pittsburg, PA.	Jun 2015

## Mentoring Experience

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Undergraduate Researcher: Tanner Yamada (University of California, Berkeley)	2018-2019
Undergraduate Researcher: Evan Biggers (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>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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<b>Rice University:</b> Molecular jiggling has implications for carbon nanotube fibers (05/31/2021)
<b>Phys.org:</b> Molecular jiggling has implications for carbon nanotube fibers (05/31/2021)
<b>Phys.org:</b> Researchers advance characterization, purification of nanotube wires and films (10/16/2017)
<b>EurekaAlert:</b> Long nanotubes make strong fibers (10/16/2017)
<b>MaterialsToday:</b> 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, DPOLY), Society of Rheology

## Services and Outreach

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Reviewer, Graduate Women in Science Fellowship	2020
Postdoc representative, Chemistry Graduate Life Committee, University of California, Berkeley, CA	2019-2020
Authorized superuser, Alivisatos lab small angle X-ray scattering facility	2018-present
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

## References

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### **Professor A. Paul Alivisatos**

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Department of Chemistry and Materials Science and Engineering  
University of California Berkeley, Berkeley, CA  
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### **Professor Matteo Pasquali**

A. J. Hartsook Professor of Chemical and Biomolecular Engineering  
Department of Chemical and Biomolecular Engineering, Chemistry, and Material Science and Nano Engineering  
Rice University, Houston, TX  
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### **Professor Kranthi K. Mandadapu**

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### **Professor Yeshayahu (Ishi) Talmon**

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