Viviana Palacio-Betancur

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EDUCATION AND TRAINING

University of Illinois at Urbana - Champaign 2025-present
Beckman Institute Postdoctoral Fellow
Advisor: Prof. Nick Jackson

University of Chicago 2016-2024
Ph.D. in Molecular Engineering and Postdoctoral Scholar
Advisor: Prof. Juan J. de Pablo

Universidad Nacional de Colombia Sede Medellín 2007-2016
B.S. in Chemical Engineering and M.S. in Materials Science
Advisor: Prof. Juan P. Hernández-Ortiz

HONORS AND RECOGNITION

Selected participant in "Rising Stars in Materials Science and Engineering" Workshop	2025
Selected participant in "Future of Faculty in Soft Matter". NSF Workshop	2025
Beckman Institute Postdoctoral Fellow, University of Illinois at Urbana-Champaign	2025
Excellence in Graduate Research, Section 8A, AIChE	2023
Excellence in Research, Poster for the Division of Soft Matter (DSOFT), APS March Meeting	2023
Chateaubraind Fellow, Office for Science and Technology of the Embassy of France	2018-2019
Eiffel Scholar, Campus France	2018-2019
Institute for Molecular Engineering Fellow, University of Chicago	2016-2020
Fulbright Fellow, Colombian Ministry of Science	2016-2020
Excellence in Materials Science Research, Universidad Nacional de Colombia	2013-2016

PUBLICATIONS

* denotes equal contribution.

9. Chuqiao Chen, **Viviana Palacio-Betancur***, Sepideh Norouzi, Pablo F. Zubieta-Rico, Nina Chang, Monirosadat Sadati, Stuart J. Rowan, and Juan J. de Pablo. LCPOM: Precise reconstruction of polarized optical microscopy images of liquid crystals. *Chemistry of Materials*, 36(7):3081–3091, 2024. doi:10.1021/acs.chemmater.3c02425.

8. **Viviana Palacio-Betancur**, Julio C. Armas-Pérez, Juan P. Hernández-Ortiz, and Juan J. de Pablo. Curvature and confinement effects on chiral liquid crystal morphologies. *Soft Matter*, 19(32):6066–6073, 2023. doi:10.1039/d3sm00437f.

7. Yu Yang*, **Viviana Palacio-Betancur***, Xin Wang, Juan J de Pablo, and Nicholas L Abbott. Strongly chiral liquid crystals in nanoemulsions. *Small*, 18(10):e2105835, March 2022. doi: 10.1002/smll.202105835.

6. Ines Gharbi, **Viviana Palacio-Betancur**, Habib Ayeb, Dominique Demaille, Juan J de Pablo, Randall D Kamien, and Emmanuelle Lacaze. Liquid crystal films as active substrates for nanoparticle control. *ACS Appl. Nano Mater.*, 4(7):6700–6708, July 2021. doi:10.1021/acsanm.1c00680.

5. Stiven Villada-Gil*, **Viviana Palacio-Betancur***, Julio C Armas-Pérez, Juan J de Pablo, and Juan P Hernández-Ortiz. Directing the far-from-equilibrium assembly of nanoparticles in confined liquid crystals by hydrodynamic fields. *Soft Matter*, 17(12):3463–3472, March 2021. doi:10.1039/d0ss02221g.

4. **Viviana Palacio-Betancur**, Julio C. Armas-Pérez, Stiven Villada-Gil, Nicholas L. Abbott, Juan P. Hernández-Ortiz, and Juan J. de Pablo. Cuboidal liquid crystal phases under multiaxial geometrical frustration. *Soft Matter*, 16(4):870–880, 2020. doi:10.1002/c9sm02021g.

3. Xin Wang, Ye Zhou, **Viviana Palacio-Betancur**, Young-Ki Kim, Lily Delalande, Michael Tsuei, Yu Yang, Juan J. de Pablo, and Nicholas L. Abbott. Reconfigurable multicompartment emulsion drops formed by nematic liquid crystals and immiscible perfluorocarbon oils. *Langmuir*, 35(49):16312–16323, 2019. doi:10.1021/acs.langmuir.9b02864.

2. Stiven Villada-Gil, **Viviana Palacio-Betancur**, Julio C. Armas-Pérez, Juan J. de Pablo, and Juan P. Hernández-Ortiz. Fluctuations and phase transitions of uniaxial and biaxial liquid crystals using a theoretically informed Monte Carlo and a Landau free energy density. *Journal of Physics: Condensed Matter*, 31(17):175101, 2019. doi:10.1088/1361-648x/ab0394.

1. **Viviana Palacio-Betancur**, Stiven Villada-Gil, Juan J. de Pablo, and Juan P. Hernández-Ortiz. Educating local radial basis functions using the highest gradient of interest in three dimensional geometries. *International*

Journal for Numerical Methods in Engineering, 110(7):603–617, 2016. doi:10.1002/nme.5368.

SUBMITTED MANUSCRIPTS

2. **Viviana Palacio-Betancur** and Nicholas Jackson. Molecular charge topologies govern polar nematic ordering. October 2025. Preprint:10.26434/chemrxiv-2025-crg6c. Submitted to *JACS*.

1. Chuqiao Chen*, **Viviana Palacio-Betancur***, Stuart Rowan, and Juan J. de Pablo. Modeling of liquid crystal elastomer particles. Submitted to *Nature Communications* (2025).

TALKS

10. Topological dereliction in liquid crystal-mediated nanoparticle assembly. In *AIChE Annual Meeting*, 2023. Orlando, FL, USA. ***Invited talk - Excellence in Graduate Research, Section 8A***

9. Exploring LC parameter space with experimentally-informed bayesian optimization. In *Gordon Research Conference - Liquid Crystals*, 2023 Manchester, NH, USA. [Poster].

8. Mesogen alignment in liquid crystal elastomer (LCE) microparticles under mechanical stress: experiments and simulations. In *APS March Meeting*, 2023. Las Vegas, NV, USA.

7. Simulating the vibrant colors of polarizing microscopy images of liquid crystals. In *APS March Meeting*, 2023. Las Vegas, NV, USA. [Poster]. ***DSOFT Poster Prize Winner.***

6. Exploring LC parameter space with experimentally-informed bayesian optimization. In *APS March Meeting*, 2023. Las Vegas, NV, USA.

5. Topological dereliction in liquid crystal-mediated nanoparticle assembly on spherical droplets. In *APS March Meeting*, 2022. Chicago, IL, USA.

4. Directing the far-from-equilibrium assembly of nanoparticles in confined liquid crystals by hydrodynamic fields. In *RSC Virtual Poster Session*, 2020. [Poster] ***Prize Winner.***

3. Topological dereliction in liquid crystal-mediated particle assembly. In *Gordon Research Conference - Liquid Crystals*, 2019. New London, NH, USA. [Poster].

2. Nano-confinement of chiral liquid crystals gives rise to exotic blue phases. In *APS March Meeting*, 2019. Boston, MA, USA.

1. Tactoids of chiral liquid crystals. In *APS March Meeting*, 2016. Baltimore, MD, USA.

PROFESSIONAL SERVICE

Journal Reviewer: Proceedings of the Royal Society A, Soft Matter, Science Advances.

TEACHING

University of Chicago — Teaching Assistant

MENG 24300 - Molecular Modeling — Spring 2023
Undergraduate course. Instructor: Prof. Andrew L. Ferguson

MENG 35210 - Complex Fluids and Non-Newtonian Flows — Fall 2021
Graduate course. Instructor: Prof. Eric G. Shaqfeh

MENG 33000 - Thermodynamics and Statistical Mechanics. — Fall 2019
Graduate course. Instructors: Prof. Juan J. de Pablo and Prof. Allison Squires

MENG 26101 - Transport Phenomena I — Fall 2017
Undergraduate course. Instructor: Prof. David Venerus

Universidad Nacional de Colombia Sede Medellín — Teaching Assistant

Introduction to Computational Materials Science. Instructor: Prof. Juan P. Hernández-Ortiz — Fall 2015

Introduction to Materials Science. Instructor: Prof. Juan Meza — Fall 2013

OUTREACH

St. Elmo Brady Academy (Website) — May 2025
Volunteer Instructor for STEAM-Lab at Booker T. Washington STEM Academy

Introduction to Chemical Engineering — Nov 2023
Guest lecturer at Universidad Nacional de Colombia, Sede Medellín

South Side Science Festival (Website) — Sep 2022
Panelist in Diversity in STEM

HerStory, Women in Science and Engineering (Website) — Jun 2019
Volunteer Instructor

3D Printing with MRSEC — Jun 2019
Volunteer Instructor, MRSEC at University of Chicago

MENTORSHIP

Huihang Qiu. PhD Student at University of Illinois at Urbana-Champaign.
Riggie Kong. PhD Student at University of Chicago.
Chuqiao Chen. PhD Student at University of Chicago.
Alejandro Olaya. Undergraduate student at UN-Medellín, now PhD student.