IVAN I. SMALYUKH
Curriculum Vitae

CONTACT INFORMATION

University of Colorado at Boulder
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H-index 76, Google Scholar, 1/10/2026

APPOINTMENTS / EMPLOYMENT

2017-present: Professor (with tenure), Department of Physics and Chemical Physics Graduate Program, University of Colorado Boulder, CO 80309

2009-present: Founding Fellow of the Renewable & Sustainable Energy Institute (RASEI), Joint Institute of NREL and University of Colorado at Boulder, Boulder, CO 80309

2017-present: Fellow, Materials Science and Engineering Graduate Program, University of Colorado Boulder, CO 80309

2017-present: Professor (courtesy appointment), Department of Electrical, Computer, and Energy Engineering, University of Colorado at Boulder, Boulder, CO 80309

2025-present: Director, CU-Boulder Satellite of the International Institute for Sustainability with Knotted Chiral Meta Matter (WPI-SKCM^2)

2022-2025: Director, International Institute for Sustainability with Knotted Chiral Meta Matter (WPI-SKCM^2)

2014-2017: Associate Professor (with tenure), Department of Physics and Liquid Crystal Materials Research Center, University of Colorado, Boulder, CO 80309

2014-2017: Associate Professor (courtesy appointment), Department of Electrical, Computer, and Energy Engineering, University of Colorado at Boulder, Boulder, CO 80309

2012-2017: Fellow and Executive Committee Member, Materials Science and Engineering Graduate Program, University of Colorado at Boulder, Boulder, CO 80309

2011-2014: Assistant Professor (courtesy appointment), Department of Electrical, Computer, and Energy Engineering, University of Colorado at Boulder, Boulder, CO 80309

2007-2014: Tenure Track Assistant Professor, Department of Physics and Liquid Crystal Materials Research Center, University of Colorado, Boulder, CO 80309

2005-2007: Postdoctoral Research Associate, University of Illinois at Urbana-Champaign

2004-2006: Visiting Scientist, Inst. For Lasers, Photonics, & Biophotonics, SUNY at Buffalo

2004-2005: Postdoctoral Researcher, Liquid Crystal Institute and AlphaMicron Inc.

EDUCATION

2003: PhD IN CHEMICAL PHYSICS Kent State University, Ohio

1994, 1995: BS & MS, WITH HIGHEST HONORS Lviv Polytechnic Natl. Univ., Ukraine

HONORS, AWARDS, & RESEARCH FUNDING

Awards and Honors

- 2025 Distinguished Alumni Award for exceptional achievements and contributions, the Glenn H. Brown Liquid Crystal Institute, USA
- 2024 AAAS Fellow Selection, Council of the American Association for the Advancement of Science (AAAS)
- 2024 Gray Medal of the BLCS, United Kingdom
- 2023 Optica Fellow selection
- IOP Publishing 2023 Top Cited Paper Award for the article "Review: knots and other new topological effects in liquid crystals and colloids"
- 2022 ICMS Distinguished Scholar, Institute for Complex Molecular Systems, Eindhoven University of Technology, The Netherlands
- Selection as the Director of International Institute for Sustainability with Knotted Chiral Meta Matter (WPI-SKCM2)
- Guinness Record of the most transparent material with a 97-99% total visible transmission (achieved on June 7, 2019).
- IAS 2021/2022 Distinguished Scholar in The Mortimer and Raymond Sackler Institute of Advanced Studies at Tel-Aviv University
- 2021 Langmuir Lectureship Award of the American Chemical Society
- 2021 SPIE Fellow selection, Society of Photo-optical Instrumentation Engineers
- 2020 KITP Visiting Fellowship, University of California at Santa Barbara
- 2019 Visiting Fellowship, Newton Institute, University of Cambridge, UK
- 2019 Distinguished Visiting Fellowship, Institute for Advanced Study, University of Birmingham, UK
- 2018 Mid-Career Award of the International Liquid Crystal Society (ILCS)
- 2018 Winner of the NASA iTech competition (as a leader of iFeather team of University of Colorado Boulder), Cycle II Energy
- 2018 Visiting Professor Fellowships of JSPS, Japan
- 2017 CNRC Chair, CNRS, University Paris-Sud, France
- 2017 "Paris Sciences Chair" Award, ESPCI Paris, France
- 2016 APS Fellow election, American Physical Society
- 2015-2016 GSoft Award for Soft Matter Research from the American Physical Society (APS), http://www.aps.org/units/gsoft/awards/
- 2015 Air Force Faculty Fellowship (USAF-SFFP)
- 2014-2015 Friedrich Wilhelm Bessel Research Award, Alexander von Humboldt Foundation, Germany: http://www.humboldt-foundation.de/web/bessel-award.html
- 2013 U.S. Department of Energy Early Career Research Award (http://science.energy.gov/early-career/)
- 2013 Visiting Fellowship of the Isaac Newton Institute (INI) for Mathematical Sciences, Cambridge University, UK; INI Program "Mathematics of Liquid Crystals"
- 2012 Selected as a MSE fellow, University of Colorado

- 2011 Kavli Frontiers Fellow, Selected by a Selection Committee of the National Academy of Sciences of the USA
- 2010 Presidential Early Career Award for Scientists and Engineers (**PECASE**), ***Office of Science and Technology Policy, the White House*** (nominated by the NSF): http://www.whitehouse.gov/administration/eop/ostp/pressroom/11052010
- 2010 Sigma Pi Sigma Favorite Professor, selected by the CU Physics Sigma Pi Sigma Student Chapter
- 2009 Selected as a Founding Fellow of RASEI
- 2009 NSF CAREER Award
- 2008 Colorado Junior Faculty Development Award (JFDA)
- 2008 NSF-DARPA Photonics Technology Access Program award
- 2006 Glenn H. Brown Prize, International Liquid Crystal Society
- 2004-2006 ICAM (Institute for Complex and Adaptive Matter) two-year Postdoc Fellowship
- 2005 & 2006 SPIE Outreach Award (as a Secretary of the Great Lakes SPIE Chapter)
- 2005 Travel Fellowship of International Institute for Complex and Adaptive Matter (I2CAM)
- 2005 UNESCO "Bio-image" Grant and travel Fellowship to participate in a summer school
- The 2003 SPIE Educational Scholarship in Optical Science and Engineering
- The International Liquid Crystal Society 2002 MultiMedia Award
- The 2002 SPIE Educational Scholarship in Optical Science and Engineering
- The 2002 Microscopy Society of America - Royal Microscopical Society Scholarship
- 2001 David B. Smith Fellowship (Kent State University)
- 2001 Focus on Microscopy Scholarship
- 1998 International Science Foundation (G. Soros) Award recognizing outstanding research

PROFESSIONAL SERVICE

- Co-Organizer of the Boulder Energy and Resilient Sustainability (BEaRS) Summer Workshop, Boulder, Colorado, USA, July 16 - 19, 2025
- Chair of the Annual Symposium on Sustainability with Knotted Chiral Meta Matter, Hiroshima, Japan, March 4-5, 2025
- Chair and Organizer of the Winter School of the International Institute for Sustainability with Knotted Chiral Meta Matter ($SKCM^2$), Hiroshima & Fukuoka, Japan, December 9-21, 2024
- Chair of the Spring Symposium on Sustainability with Knotted Chiral Meta Matter, Nara Japan, March 8-10, 2024
- Chair of the Kickoff Symposium of the International Institute for Sustainability with Knotted Chiral Meta Matter ($SKCM^2$), Hiroshima, Japan, March 20-22, 2023
- Director (2022-2025), Intl. Institute for Sustainability with Knotted Chiral Meta Matter ($SKCM^2$) with headquarters in Hiroshima, Japan and with nodes in the USA (MIT, Georgia Tech & CU-Boulder, Cambridge U, Utrecht U, Max Planck Inst., RIKEN and Tokyo Tech).
- Chair of the 2019 Gordon Research Conference on Liquid Crystals, University of New England, ME
- GSoft Awards Committee member, American Physical Society, 2016-2018.

- Vice Chair of the 2017 Gordon Research Conference on Liquid Crystals, University of New England, ME
- Co-organizer of the Symposium "Liquid Crystalline Materials—Displays and Beyond" at the 2016 MRS Spring Meeting, March 28-April 1, 2016, Phoenix, Arizona
- Co-Chair of the Workshop "Plasmonics and its Applications", Boulder, Colorado, March 21-22, 2016
- Invited Editor for the Proceedings of the National Academy of Sciences of the United States of America: doi: 10.1073/pnas.1508865112; H. Jeridi et al., *PNAS* **112**, 14771–14776 (2015).
- Organizer of the annual inter-continental advanced materials for photonics (I-CAMP) summer schools: http://www.colorado.edu/i-camp/previous
- Co-Chair of the Emerging Liquid Crystal Technologies X Conference, Part of the SPIE Photonics West International Symposium, 7–12 February 2015, The Moscone Center, San Francisco, California, United States
- Co-Chair of the "Energy Transport 2015" Workshop, Boulder, CO, December 14-16, 2015
- Organizer/Chair of the I-CAMP'14 Summer School on Topology and Geometry in Soft Matter, Optics, and Biological Systems, South Africa, June 15-29, 2014: http://i-camp.colorado.edu/i-camp2014/
- Scientific/Organizing Committee of OLC2013 (September 29 - October 4, 2013, Honolulu, Hawaii): http://www.lcinet.kent.edu/conference/19/index.php
- Faculty Search Committee Chair for CU Materials Science and Engineering Program (hired Prof. Xiaobo Yin in Mechanical Engineering, who is starting from the Fall 2013 semester).
- Organizer & Co-Chair of the I-CAMP'13 School in Cambridge, UK, June 26 – July 6, 2013: http://www.colorado.edu/i-camp/previous-i-camps/i-camp-2013
- Dissertation, Comps II, & Comps III Committees for over 35 PhD students in Physics, Chemistry, Chemical & Biological Engineering, & Electrical Computer Energy Engineering departments
- Co-Organizer of the Frontiers of Soft Matter Symposium, May 16-18, Boulder, Colorado: http://fsm2012.colorado.edu/
- Materials Science and Engineering Executive Committee Member (since 2012)
- Organizer and Co-Chair of the I-CAMP'12 School in Boulder, Colorado, July 21-August 17, 2012: http://www.colorado.edu/i-camp/previous-i-camps/i-camp-2012
- Physics Graduate Admissions, Colloquium, Undergraduate Advising, and other Committees, two MSE Faculty Search Committees, RASEI Big Energy Committee, etc.
- Co-Chair, Planer-Smoluchowski Soft Matter Workshop on Liquid Crystal Colloids: http://www.icmp.lviv.ua/pssm2011/
- Chair of the Metamaterials Workshop in Hangzhou, China, April, 2011: http://icamconferences.org/metamaterial/
- Chair of the I-CAMP'11 School, Argentina-Uruguay, May 28-June 17, 2011: http://www.colorado.edu/i-camp/previous-i-camps/i-camp-2011
- Chair of the I-CAMP 2010 summer school in Australia, June 20-July 10, 2010: http://www.colorado.edu/i-camp/previous-i-camps/i-camp-2010
- Chair of the CIMOPV workshop in Brisbane, Australia, July 1-3, 2010: http://icamconferences.org/cimopv/index.html
- Chair of the Inter-continental advanced materials for photonics I-CAMP'09 held in China, June 28-July 19: http://icamconferences.org/i-camp/

- Chair of the Planer-Smoluchowski Soft Matter Workshop PSSM-2009: http://www.colorado.edu/i-camp/previous-i-camps/i-camp-2009
- Chair of the LC2CAM conference (together with N. Clark), August 6-10, 2008; web page: http://www.colorado.edu/i-camp/previous-i-camps/i-camp-2008
- Program/organizing Committee member for the annual "Emerging Liquid Crystal Technologies" Conference at the annual Photonics West symposia, San Francisco, CA
- Organizer and local coordinator of the CU-Boulder Branch of the International Institute for complex Adaptive Matter (ICAM-I2CAM), http://icam-i2cam.org/
- Editorial Board Member of the international journal "Advances in Condensed Matter Physics": http://www.hindawi.com/journals/acmp/editors.html
- Editor in Chief, J. of Physical Chemistry and Biophysics
- Faculty Advisor of the Univ. of Colorado SPIE Student Chapter (2008-prsent): http://spie.org/x1742.xml?chapter_id=1036246
- Faculty Advisor, Univ. of Colorado Boulder's MRS Student Chapter (jointly with N. A. Clark, 2009-2013): http://www.mrs.org/current-chapters/
- ***Referee for*** Science, Nature, Nature Materials, Procs. Natl. Acad. Sci. USA, Nature Photonics, Nature Communications, Nano Letters, Physical Review Letters, Applied Physics Letters, Physical Review E, Scientific Reports, Physics Letters A, JACS, Opt. Express, Applied Optics, J. Phys.: Cond. Matter, ChemComm, Nanoscale Research Letters, Europhys. Lett., J. Biomedical Optics, European Phys. J. E, Nanotechnology, Optical Engineering, J. Mol. Liquids, Soft Matter, PLoS One, JSTAT, Advanced Materials, Angewandte Chemie, Accounts of Chemical Research, J. Colloids and Surfaces A, J. of Physics D:Applied Physics, ACS Nano, Optical Materials Express, Laser & Photonics Reviews, Mol.Cryst.Liq.Cryst., Liquid Crystals, J. of Selected Topics in Quantum Electronics, Entropy, Advances in Cond. Matter Physics, Opto-Electronics Review, Sensors & Actuators B, J. of Physical Chemistry Letters, J. Phys. Chemistry and Biophysics, Electrocemical and Solid State Letters (ESTL), Polymer, J. Nanoscience Lett., Nanoscale, Materials, Small, Royal Society Proceedingss A, J. Industrial & Engineering Chemistry Research, ChemPhysChem, Macromolecules, AIP Advances, Journal of the Royal Society Interface, Materials Chemistry & Physics, J. Phys. and Chem. of Solids, Industrial & Engineering Chemistry Research, New J. of Phys. and Langmuir.
- Member of NSF and DOE Review Panels and Referee of individual and Center research proposals for the NSF (~20 proposals total) and DOE (8 proposals total).
- Chair of the Soft Matter Oversight Committee of the Intl. Institute for Complex Adaptive Matter (ICAM-I2CAM)
- Instructor of SPIE conference short courses (e.g. the SC790 short course) on Liquid Crystals
- Member of the SPIE Regional Chapter Task Force Committee (2004-2006);
- Instructor for the SPIE Traveling Lecturer Outreach Program;
- Executive Committee Member and Member of the Board of Governors of the International Institute for Complex Adaptive Matter (ICAM-I2CAM, http://www.i2cam.org/)
- Chair of "Liquid Crystal Technology & Applications" conference, Dayton, June 12-16, 2006
- Member of the SPIE Scholarships and Grants Committee (2004-2012)

PUBLICATIONS (http://www.colorado.edu/physics/SmalyukhLab/publs.html)

Peer-reviewed articles & chapters	# of citations	I_{10} index	H index	*Nature & Science*	*PNAS,Nature family journals*	*PRL, PRX & Nano Lett*
277	17905	240	76	9	47	37

Bold font - Smalyukh Research Group members:
http://www.colorado.edu/physics/SmalyukhLab/people.html
Bold red font – Undergraduate (at the time of working on the research project) co-authors who are current or past Smalyukh Group members;
I. I. Smalyukh* - Prof. Smalyukh is the corresponding author (marked with the asterisk).

Articles in peer-reviewed journals

1. **D. Hall**, **J.-S. B. Tai,** L. Kauffman and **I. I. Smalyukh.*** Self-assembly and reconfiguration of complex knots via reconnections of vortices. *Nature Phys.* doi.org/10.1038/s41567-025-03107-0 (2026).
2. **R. Fei**, V. Q. Cordero, **I. I. Smalyukh**, N. Stingelin, J. van de Lagemaat. Polariton Control of Molecular Charge Transfer in Perylene Diimide Semiconductors. J. Phys. Chem. Lett. doi.org/10.1021/acs.jpclett.5c02566 (2026).
3. T. Orlova, A.M. Solis, T. Madeleine, G. D'Alessandro, M. Kaczmarek, J. Brodzki, **H.R.O. Sohn**, and **I.I. Smalyukh**. Multiscale geometrical and topological learning in the analysis of soft matter collective dynamics. *Phys Rev Materials* 1**0,** 015602 (2026).
4. **A. Bhardwaj, B. Fleury, B. Senyuk, E. Abraham, J. B. ten Hove, T. Lee, V. Cherpak, and I. I. Smalyukh**.* Mesoporous optically clear heat insulators (MOCHI) for sustainable building envelopes. *Science* **30**, 1171-1176 (2025).
5. **H. Zhao and I. I. Smalyukh***. Space-time crystals from solitonic interactions in a classical soft matter system. *Nature Materials* **24**, 1802–1811 (2025).
6. S. Takano, T. Asahi and **I.I. Smalyukh**.* Chirality-assembled photonic microchips. *Nat. Photon*. **19**, 659–661 (2025).
7. **I.I. Smalyukh**.* Enhancing interdisciplinary impact of soft matter with a new npj journal. *npj Soft Matter* **1**, 1-2 (2025).
8. **V.G Parale**, H. Choi, V.D. Phadtare, R.P. Dhavale, Y. Kim, A.A. Ransing, **I. I Smalyukh,** M. Meo, H.-H. Park. Strong yet mechanically flexible thick necked aerogels fabricated via in situ-catalyzed epoxy-thiol polymerization with necking enhancement: A finite element simulation and wastewater treatment applications. *Chemical Eng. J.* **525**, 170739 (2025)
9. **G.N. C. Amaral**, **H. Zhao**, M. Sedahmed, T. Campante, **I.I. Smalyukh**,* M. Tasinkevych, M. M. Telo daGama & R. C. V. Coelho. Liquid crystal torons in Poiseuille-like flows. *Scientific Reports.* **15**, 2684 (2025).
10. **C. Meng, J.-S. Wu, Žiga Kos,** J. Dunkel, C. Nisoli, and **I. I. Smalyukh.*** Emergent dimer-model topological order and quasi-particle excitations in liquid crystals: Combinatorial vortex lattices, *Phys. Rev. X* **15**, 021084 (2025).
11. **N. Kent**, C. Gates, **B. Senyuk, J. B. ten Hove**, J. Cameron, **I. I. Smalyukh.** Controlling Magnetotactic Bacteria and Their Topological Patterns Based On Analyzing Nanomagnetic Structures. *Phys Rev E* **112**, 044411 (2025).

12. **J.-S. Wu,** M.T. L´azaro, **S. Ghosh, H. Mundoor,** H. Wensink **and I.I. Smalyukh***. Unavoidable multilevel biaxial symmetry breaking in chiral hybrid liquid crystals. *Phys. Rev. E* **111**, 045410 (2025).
13. **J.-S. Wu**, R. Abril Valenzuela, M. Bowick & **I.I. Smalyukh*.** Topological Rigidity and Non-Abelian Defect Junctions in Chiral Nematic Systems with Effective Biaxial Symmetry. *Phys. Rev. X* **15**, 021036 (2025).
14. **J.-Y. Lee, A. Kumari, Y. Yuan,** M. Tasinkevych and **I. I. Smalyukh**. Hybridization of colloidal handlebodies with singular defects and topological solitons in chiral liquid crystals. *Soft Matter* **21**, 4323-4335 (2025)
15. **J-Y. Lee,** M. H. Godinho, M. Zeghal, P. Judeinstein, **I.I. Smalyukh** and P. Pieranski, Decay of skeins of dislocations, from Conway's tangles to necklaces of bangles. *Soft Matter* **21**, 8205-8218 (2025).
16. B. Kou, **J.-S. Wu,** P. van der Schoot, Y. Ma, Y. Huang, X. He, T. Wu, Z. Yang, **I. I. Smalyukh***, E. Kumacheva. Confinement-induced emergence of chirality in phase-separated achiral polymer solutions. *Sci. Adv*. **11**, eadv6734 (2025).
17. J. Peixoto, **D. Hall**, D.J. Broer, **I.I. Smalyukh**, D. Liu. *SPIE Procs.* **13016**, 1301605. Thermal actuation of topological soliton embedded into liquid crystal coating. Liquid Crystals Optics and Photonic Devices. (2024). https://doi.org/10.1117/12.3016266
18. **J.-S. Wu**, M.T. Lázaro, **H. Mundoor,** H. H. Wensink & **I. I. Smalyukh**.***** "Emergent biaxiality in chiral hybrid liquid crystals." *Nature Communications* **15**, 9941 (2024).
19. **J.-S. B. Tai, A. Hess, J-S. Wu** and **I. I. Smalyukh.* "**Field-controlled dynamics of skyrmions and monopoles." *Science Advances* **10** (4), eadj9373 (2024).
20. **B. Senyuk, J-S. Wu and I. I. Smalyukh.*** Out-of-equilibrium interactions and collective locomotion of colloidal spheres with squirming of nematoelastic multipoles. *PNAS* **121**, e2322710121 (2024).
21. Y. Yuan & **I.I. Smalyukh**. Topological chiral and knotted nematic colloids. *Crystals* **14**, 885 (2024).
22. **A. Repula,** C. Gates, J. C. Cameron and **I. I. Smalyukh.*** "Photosynthetically-powered phototactic active nematic fluids and gels". *Communications Materials* **5**, 37 (2024).
23. C. L. Bassani, **I.I. Smalyukh** *et al*. Nanoparticle Assemblies: Current Advances and Open Problems. *ACS Nano* **18***,* 14791–14840 (2024).
24. D. Wang, J.Chen, Y. Wang, X. Hao, **H. Peng**, Y. Liao, X. Zhou, **I.I. Smalyukh,** X. Xie. Triple-mode Photoswitching by Supramolecular Liquid Crystalline Coordination Complex. *Chemistry–A European Journal* **30**, e202304366 (2024).
25. B.P. Radka, **T. Lee, I. I. Smalyukh**, T. J. White. "The association of structural chirality and liquid crystal anchoring in stabilized cholesteric liquid crystals." *Soft Matter* **20**, 1815-1823 (2024).
26. **R. Fei**, M. P. Hautzinger, A. H. Rose, **I. I. Smalyukh,** M. C. Beard, J.van de Lagemaat. Controlling exciton/exciton recombination in 2-D perovskite using exciton–polariton coupling. *The Journal of Physical Chemistry Letters* **15**, 1748-1754 (2024).
27. J. Peixoto, **D. Hall**, D. J. Broer, **I.I. Smalyukh** & D. Liu. **"**Mechanical actuation via homeomorphic transformations of topological solitons within polymer coatings." *Advanced Materials* **36**, 2308425 (2024).
28. J.L. Barrat, **I.I. Smalyukh et al**. "Roadmap for soft matter." Invited. *J Phys Materials* **7**, 012501 (2024).

29. **E. Abraham, V. Cherpak, J.B. ten Hove, B. Senyuk, T. Lee, Q. Liu and I. I. Smalyukh.*** "Highly transparent silanized cellulose aerogels for boosting energy efficiency of glazing in buildings". *Nature Energy* **8**, 381–396 (2023). doi:10.1038/s41560-023-01226-7
30. **H. Zhao,** B. Malomed and **I. I. Smalyukh.* "**Topological solitonic macromolecules." *Nature Comm* **14**, 4581 (2023).
31. **I. I. Smalyukh.*** Transparent aerogels reduce energy loss through building windows. *Nature Energy* **8,** 327–328 (2023). https://doi.org/10.1038/s41560-023-01229-4
32. **C. Meng, J.-S. Wu, and I. I. Smalyukh.*** "Topological steering of light by nematic vortices and analogy to cosmic strings". *Nature Materials* **22**, 64–72 (2023).
33. **H. Zhao, J.-S. B. Tai**, **J.-S. Wu,** and **I. I. Smalyukh.*** "Liquid crystal defect structures with Möbius strip topology". *Nature Physics* **19**, 451–459 (2023).
34. R.C.V. Coelho, H. Zhao, M. Tasinkevych, **I.I. Smalyukh**, M.M.T. da Gama. "Sculpting liquid crystal skyrmions with external flows". *Phys Rev Research* , 033210 (2023).
35. **S. Ghosh, E. Abraham and I.I. Smalyukh**.* Low-voltage Haze Tuning with Cellulose-Network Liquid Crystal Gels. *ACS nano* **17**, 19767-19778 (2023).
36. **D. Benkowska-Biernacka, I.I. Smalyukh** and K. Matczyszyn. Phase behaviour of phospholipid-based myelin figures in a wide range of pH. *J. Molecular Liquids* **391**, 123365 (2023).
37. Y. Wang, Y. Liu, X. Hao, X. Zhou, H. Peng, Z. Shen, **I. I. Smalyukh**, X. Xie, B. Yang. "Supramolecular Liquid Crystal Carbon Dots for Solvent-free Direct Ink Writing". *Advanced Materials* **35**, 202303680 (2023).
38. **M. Tasinkevych, S. Park, H. Mundoor** and **I. I. Smalyukh.*** "Nanoparticle localization within chiral liquid crystal defect lines and nanoparticle interactions." *Phys. Rev. E* **107**, 034701 (2023).
39. G. Poy, **A. Hess, A.J. Seracuse, M.A. Paul,** S. Zumer, **I. I Smalyukh.*** Interaction and co-assembly of optical and topological solitons. *Nature Photonics* **16**, 454-461 (2022).
40. **J.-S. B. Tai, J.-S. Wu** and **I. I. Smalyukh.* "**Transformations and hopping of hopfions in bend-relaxed chiral nematics." *Nature Commun.* **13**, 2986 (2022).
41. **A. Repula, E. Abraham, V. Cherpak and I. I Smalyukh.*** Biotropic liquid crystals. *Procs. Natl. Acad. Sci. USA,* **119**, e220093011 (2022).
42. **J.-S. Wu and I. I. Smalyukh.*** Topological defects and solitons in chiral liquid crystals. *Liquid Crystal Reviews* **10**, 34-68 (2022).
43. **S. Ghosh and I.I. Smalyukh**. "Solar gain control in the near infrared by plasmonic nematic colloidal dispersions of silver nanoparticles." *Advanced Optical Materials* **10**, 2201513 (2022).
44. A. L. Yeang, T. S. Hernandez, M.T. Strand, D. J. Slotcavage, **E. Abraham, I.I. Smalyukh**, C. J. Barile, M. D. McGehee. Transparent, High-Charge Capacity Metal Mesh Electrode for Reversible Metal Electrodeposition Dynamic Windows with Dark-State Transmission< 0.1%. *Advanced Energy Materials* **12**, 12, 202200854 (2022).
45. G. Park, A. Suh, **H. Zhao**, C. Lee, Y.-S. Choi, **I. I. Smalyukh*** and D. K. Yoon. "Fabrications of Topological Solitons Array in Patterned Chiral Liquid Crystals for Real-time Observation of Morphogenesis." *Advanced Materials* **34**, 2201749 (2022).
46. **B. Senyuk, C. Meng and I. I. Smalyukh.*** Design and preparation of nematic colloidal particles. *Langmuir* **38**, 9099–9118 (2022).

47. **B. Senyuk, R. E. Adufu** and **I. I. Smalyukh.*** Electrically Powered Locomotion of Dual-Nature Colloid-Hedgehog and Colloid-Umbilic Topological and Elastic Dipoles in Liquid Crystals. *Langmuir* **38**, 689–697 (2022).
48. **C. E. Lubner**, J. Artz, D. W. Mulder, A. Oza, **R. Ward**, S. G. Williams, A. K. Jones, J.H. Artz, J. W. Peters, **I. I. Smalyukh**, V. S. Bharadwaj and P.W. King. A Site-Differentiated [4Fe-4S] Cluster Controls Electron Transfer Reactivity of Clostridium acetobutylicum [FeFe]-hydrogenase I. *Chemical Science* **13**, 4581-4588 (2022).
49. T. Chang, B. Wang, D. Yuan, J. Wang, **I. I. Smalyukh*,** G. Zhou and Z. Zhang. Cellulose nanocrystal chiral photonic flakes for multiple anti-counterfeiting and identification. *Chem. Eng. J.* **446**, 136630 (2022).
50. **H. Mundoor, J.-S. Wu,** H. Wensink and **I.I. Smalyukh.*** "Monoclinic liquid crystals from discs and rods." *Nature* **590**, 268-274 (2021).
51. **B. Senyuk, K. Crust**, A. Mozaffari, Y. Zhou, R. Zhang, J. de Pablo and **I.I. Smalyukh.** "Elastic colloidal octupoles and transformations of multipoles in nematic colloidal emulsions." *Science Advances* **7**, eabg0377 (2021).
52. J. Everts, **B. Senyuk, H. Mundoor,** M. Ravnik and **I.I. Smalyukh.*** "Anisotropic electrostatic screening of charged colloids in nematic solvents." *Science Advances* **7**, eabd0662 (2021).
53. **I. I. Smalyukh.*** "Thermal Management by Engineering the Alignment of Nanocellulose" *Advanced Materials* **33** (28), 2001228 (2021).
54. A. J. Ackroyd, G. Holló, **H. Mundoor**, H. Zhang, O. Gang, **I. I. Smalyukh**, I. Lagzi, E. Kumacheva. "Self-organization of nanoparticles and molecules in periodic Liesegang-type structures." *Science Advances* **7**, eabe3801 (2021).
55. A. O. Leonov, C. Pappas and **I. I. Smalyukh**.* Field-driven metamorphoses of isolated skyrmions within the conical state of cubic helimagnets. *Phys Rev B* **104**, 064432 (2021).
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Articles in refereed journals *accepted, under review, or in preparation for submission*

268. **S. Ghosh, J.-S. Wu,** L. Longa **and I.I. Smalyukh**. Hybrid liquid crystals from molecular and colloidal rods. *Matter* Accepted (2025).
269. **H. Zhao**, R. Zhang and **I. I. Smalyukh***. Observation of discrete space-time crystals in a classical soft matter system. Submitted (2025).
270. **S. Bhardwaj**, S. Singh, P. Dixit, **I. I. Smalyukh**, P. K. Maji. Cellulose aerogels-based phase change materials: Concept, Progress, and Perspectives. Submitted (2025).
271. M. Tasinkevych and **Ivan I. Smalukh**. Topological solitons in liquid crystals: Building blocks of novel active and driven matter. Submitted (2025).
272. R. C. V. Coelho, **H. Zhao,** G. N. C. Amaral, **I. I. Smalyukh,** M. M. Telo da Gama and M. Tasinkevych."*Hall" transport of liquid crystal solitons in Couette flow.* Submitted (2025).
273. Y. Nozaki**, D. Hall**, **I. I. Smalyukh,** Y. Koda. "Analysis of Hopf solitons as generalized fold maps." Submitted (2025).
274. A. Bupathy, **D. Hall**, **I.I. Smalyukh**, G. Campos-Villalobos, and M. Dijkstra. From Knots to Crystals: Machine-Learned Potentials for Self-Assembling Topological Solitons in Liquid Crystals. Submitted (2025).
275. **C. Meng,** G. Poy, **J.-S. Wu,** S. Zumer **and I. I. Smalyukh.*** Interactions between co-planar chiral nematic vortices and optical solitons. Submitted (2025).
276. J. Peixoto, **H. Zhao**, D. J. Broer, **I.I. Smalyukh** & D. Liu **"**Elastomeric concentric solitonic rings for actuation." Submitted (2025)
277. P. Pieranski, **I. Smalyukh**, M. Zeghal, P. Judeinstein and M. H. Godinho. Topological immunity against annihilation of dislocations in cholesterics. Submitted (2025).
278. **H. Zhao**, H. Nishikawa, **J.-S. Wu**, F. Araoka and **I. I. Smalyukh***. Moiré superlattices from discretely twisted topological solitons in chiral ferroelectric fluids. Submitted (2025).
279. C. Gates, **H. Mundoor, I.I. Smalyukh*** and J.C. Cameron. Interactions of Phototropism and Gravitropism in Cyanobacteria. In preparation (2025).
280. **C. Meng,** Z. Kos, **J.-S. Wu**, C. Nisoli, J. Dunkel & **I. I. Smalyukh*.** Design and control of broken symmetries and substitutional defects in nematic vortex crystals. In preparation (2025).
281. **D. Hall**, **J.-S. B. Tai,** Y. Koda, Y. Nozaki and **I. I. Smalyukh.*** **"**High-index heliknotons and heliknoton hybridization." In preparation (2025).

282. **B. Senyuk, Z. Mai**, Ž. Kos, **H. Zhao, J.-S. B. Tai**, Y. Wang, G. Zhou & **I. I. Smalyukh**.* Colloidal knotwalking in chiral nematic fluids. In preparation (2025).
283. J. A. Morris, **J.-S. Wu**, A. Neophytou, **B. Senyuk**, M. R. Dennis, **I. I. Smalyukh**, and D. Chakrabarti. Mesophases with partial positional order for spherical nematic colloids. In preparation (2025).
284. **J.-S. Wu** and **I. I. Smalyukh.* "**Landau-de Gennes numerical simulation of nematic liquid crystals utilizing radial basis functions." In preparation (2025).
285. C. Gates, **A. Repula, E. Abraham,** J. C. Cameron and **I. I. Smalyukh.*** Optical control and imaging of an artificial leaf. In preparation (2025).
286. **D. Hall**, J. Peixoto, A. De Simone, D. J. Broer, D. Liu & **I.I. Smalyukh "**Towards hopfion haptics: 3D solitons at work." In preparation (2025)
287. **J.-S. Wu, J.-S. B. Tai, P. J. Ackerman,** M. Tasinkevych and **I. I. Smalyukh.* "**Inter-knotted solitons in chiral nematics studied using the Q-tensor approach." In preparation (2025).
288. **E. Abraham**, P. Rawte, K. A Bertness, **V. Cherpak, J.B. ten Hove,** T.J. White, M. I. Hussein, **and I. I. Smal**yukh. Nanoscale-to-macroscale integration of thermomechanical aerogels into device architectures. In preparation (2025).
289. **J.-S. Wu**, R. Abril Valenzuela, M. Bowick & **I.I. Smalyukh*.** Nonabelian braids, links and linkoids. In preparation (2025).
290. **B. Senyuk & I. I. Smalyukh**.* Collective motility and emergent order in magnetototactic bacteria. In preparation (2025).
291. **J.-S. B. Tai** and **I. I. Smalyukh.*** Shankar skyrmions in biaxial liquid crystals and colloidal ferromagnets. In preparation (2025).
292. M. Tasinkevych, **H. R. O. Sohn, Changda Liu and I. I. Smalyukh**.* Optical control of assembly and spin ice of liquid crystal skyrmions. In preparation (2025).
293. **S. Ghosh, J.-S. Wu,** L. Longa **and I.I. Smalyukh**. Towards Triclinic nematics. In preparation (2025).
294. **H. Zhao, J. Wu and I.I. Smalyukh**. Ferroelectric topological solitons. In preparation (2025).
295. **O. Iadlowska, J.-S. Wu, N. Golden and I.I. Smalyukh**. Ferroelectric nematic colloids. In preparation (2025).
296. **N. Golden, O. Iadlowska, P. Pattis, J.-S. Wu, and I.I. Smalyukh**. Diffusion and self-propulsion of ferroelectric nematic colloids. In preparation (2025).
297. **S. Ghosh, J.-S. Wu,** L. Longa **and I.I. Smalyukh**. "Diffusion of bent-core colloidal particles in nematic and cholesteric host media." In preparation (2025).
298. **H. Karaghiaulleian, G. Chen, D. Hall and I.I. Smalyukh**.* Effects of confinement on crystalline assemblies of heliknotons in chiral liquid crystals. In preparation (2025).
299. **H. Zhao and I.I. Smalyukh**.* Structure and dynamics of hybrid torons. In preparation (2025).
300. **H. Zhao and I.I. Smalyukh**.* Instanton analogues in chiral liquid crystals. In preparation (2025).
301. **E. Abraham and I.I. Smalyukh**.* Double network MOCHI with superior mechanical properties. In preparation (2025).
302. **E. Abraham, C. Brininger, J.C. Cameron and I.I. Smalyukh**.* Bio-cemented cellulose aerogels. In preparation (2025).

303. **V. Cherpak, P. de Melo, E. Abraham and I.I. Smalyukh**.* MOCHI fabricated using engineering fluid supercritical drying. In preparation (2025).
304. **E. Abraham, S. Singh, H. Moondur and I.I. Smalyukh**.* Electrically Tunable Optically active Long-Range Ordered Cholesteric Cellulose Nanocrystals in organic solvents. In preparation (2025).
305. **M. Qaiser, H. Zhao, I.I. Smalyukh** and I. Dierking. Solotonic polyskyrmionomer macromolecule dynamics. In preparation (2025).

Examples of popular science articles & conference reviews *published* (not peer reviewed)

1. C. Leal and **I.I. Smalyukh**, "Sheltering In Place At The Charles T. Munger Physics Residence", *KITP Newsletter, Spring Issue* (2020).
2. **I.I. Smalyukh**, "Fundamentals of Condensed Matter and Crystalline Physics: An Introduction for Students of Physics and Materials Science", *Phys. Today* **66**, 49 (2013).
3. **I.I. Smalyukh**, "Confined Liquid Crystals: a Workshop in Ljubljana", *Liquid Crystals Today* **20**, 63–67 (2011).
4. **I.I. Smalyukh**, S. Shiyanovskii, D. Termine, O.D. Lavrentovich, *G.I.T. Laboratory Journal* **3**, 118-120 (2002).
5. N. M. Silvestre and **I. I. Smalyukh**. "A tropical insight on the '9th Ibero-American Workshop on Complex Fluids and the 2nd Italian-Brazilian Workshop on Liquid Crystals." *Liquid Crystals Today* **24**, 60-62 (2015).
6. **I.I. Smalyukh** and **A. Trokhymchuk**. "Planer Smoluchowski Soft Matter Workshop on Liquid Crystals and Colloidal Dispersions", *Cond. Matter Phys.* **13**, 37101 (2010).
7. **I.I. Smalyukh**, Microscience, *Procs. Royal Microscopical Society* **37**, 157-158 (2002).
8. **I.I. Smalyukh**,* **P. Ackerman, R.P. Trivedi, and T. Lee,** "Control of defects in matter using optical phase singularities", *SPIE Newsroom*, DOI: 10.1117/2.1201008.003079, August (2010): http://spie.org/x41517.xml?highlight=x2408&ArticleID=x41517

HIGHLIGHT ARTICLES ABOUT OUR RESEARCH & JOURNAL COVERS

(selected from many more, written by prominent scientists and journal editors)

- G. P. Alexander. Knot your regular crystal of atoms. *Science* **365**, 1377 (2019).
- M. Lavine. Knot all that it seems. Science **365**, 1414 (2019).
- L. Crane. A strange new type of crystal is made of fluid tied into knots. New Scientist, Sept 26, 2019: https://www.newscientist.com/article/2217616-a-strange-new-type-of-crystal-is-made-of-fluid-tied-into-knots/?utm_campaign=RSS%7CNSNS&utm_source=NSNS&utm_medium=RSS&utm_content=news
- B. Dumé. 3D knots appear in liquid crystals. Physics World. Sept. 26, 2019. https://physicsworld.com/a/3d-knots-appear-in-liquid-crystals/
- D. Srain. How to tie microscopic knots. Science Daily, Sept 26, 2019: https://www.sciencedaily.com/releases/2019/09/190926141648.htm
- Nature, Research highlight, May 18, 2018 highlight of our Science article: A liquid crystal that could make your television screen brighter and clearer: https://www.nature.com/research-highlights
- P. Poulin. How to achieve a successful biaxial marriage. *Science* **360**, 712-713 (2018).
- B. Yirka. A new way to make biaxial nematic phase liquid crystal. Phys.org highlight of our Science article: https://phys.org/news/2018-05-biaxial-nematic-phase-liquid-crystals.html

- M. Lavine. Finding order in twos. *Science* **360** (6390) (2018).
- K. Nayani, Y.-K. Kim & N. L. Abbott. Chiral interactions in liquid crystals. *Nature Mater.* **17**, 14 – 15 (2018).
- An image from our article *Nature Materials* 16, 426-432 (2017) was selected as the April 2017 *Nature Materials* issue cover.
- R. Won. Liquid crystals: Realizing 3D topological solitons. *Nature Photonics* **11**, 273 (2017). (A highlight of our Phys Rev X 2017 article).
- I. Georgescu. "3D topological solitons: Out of the shadows." Nature Physics **13**, 208 (2017) doi:10.1038/nphys4061 (highlight of our Nature Materials and Phys Rev X articles)
- A highlight article about our research on ferromagnetic topological solitons (hopfions) was written by Paul Sutcliffe, "Chiral ferromagnetic fluids: Let's twist again" *Nature Materials* **16**, 392–393 (2017).
- Lisa Zyga. A highlight article "Never-before-seen topological solitons experimentally realized in liquid crystals." Phys.org, February 7 (2017).
- Read more at: https://phys.org/news/2017-02-never-before-seen-topological-solitons-experimentally-liquid.html#jCp
- A highlight article "Now you see them, now you don't" in *Physics* about our article *Phys. Rev. Lett.* **117**, 277801 (2016) written by Katherine Wright: http://physics.aps.org/synopsis-for/10.1103/PhysRevLett.117.277801
- A highlight about our Science article written by C. Blanc. "Colloidal crystal ordering in a nematic liquid crystal." *Science* **352**, 40-41 (2016).
- Our research from the article by B. Senyuk *et al* was highlighted on the Front Cover of the issue #45 (volume 11, 2015) of the *Soft Matter* Journal of the Royal Society of Chemistry.
- Our Optics Express article [Martinez A, Smalyukh II. Light-driven dynamic Archimedes spirals and periodic oscillatory patterns of topological solitons in anisotropic soft matter. Opt Exp. 23:4591 (2015).] was highlighted by F. Castles, "Spiralling solitons" *Liq. Crystal Today* **24**, 132 (2015).
- Our Soft Matter article by N. Petrit-Garrido et al was featured on the front cover of November 7, 2014 journal issue #41
- Our *Physical Review Letters* article by Campbell *et al* is featured on the journal cover: http://journals.aps.org/prl/issues/112/19
- B. Verberck. "Knotty business" Nature Physics **10**, 86 (2014).
- Our paper by Q. Liu, M.Campbell, J. Evans & I. Smalyukh in *Advanced Materials* is featured on the journal cover: http://onlinelibrary.wiley.com/doi/10.1002/adma.v26.42/issuetoc
- Our paper "Mutually tangled colloidal knots and induced defect loops in nematic fields." by Martinez et al is featured on the cover of March 2014 issue of *Nature Materials*: http://www.nature.com/nmat/journal/v13/n3/index.html
- W.T.M. Irvine and D. Kleckner. "Liquid crystals: Tangled loops and knots." *Nature Mater.* **13**, 229–231 (2014).
- An image from our manuscript on Topography from topology is featured on the cover of Advanced Materials, Issue #41, November 2013.
- E. Terentjev, "Liquid crystals: Interplay of topologies," *Nature Mater.* **12**, 187–189 (2013).
- M. Ravnik, "Viewpoint: Topology with Liquid Crystals", *Physics* **6**, 65 (2013), DOI: 10.1103/Physics.6.65

- R. Daw, "Topology matters" *Nature* **493**, 168 (2013): News & Views highlight of our article in *Nature* **493**, 200-205 (2013).
- F. Castles, *Liquid Crystals Today* **21**, 81-82 (2013).
- J. N. A. Matthews, "Globetrotting school aims to fuse condensed matter and culture" *Phys. Today* **66** (9) 22 (2013). doi: 10.1063/PT.3.2112
- M. Bowick, in the Journal Club for Condensed Matter Physics, JCCM_AUGUST_2013_01: http://www.condmatjournalclub.org/jccm-content/uploads/2013/08/JCCM_AUG2013_01.pdf
- T. Phillips, "Topological colloids", A monthly magazine from the American Mathematical Society: http://www.ams.org/news/math-in-the-media/math-in-the-media#four
- L. Snider, "Research by CU-Boulder physicists creates 'recipe book' for building new materials", CU-Boulder press release: http://www.colorado.edu/news/releases/2012/12/26/research-cu-boulder-physicists-creates-'recipe-book'-building-new-materials
- R. Won, "Large-scale control" *Nature Photonics* **6**, 138 (2012): highlight of our PNAS article by A. Martinez et al.
- Our Optics Express article "Alignment of high-aspect ratio colloidal gold nanoplatelets in nematic liquid crystals," was selected for the Journal of Applied Physics 110, 033535 (2011).
- Our research on colloidal self-assembly in liquid crystals is highlighted by the National Science Foundation: http://bit.ly/qYthQ8
- Ingo Dierking, "Editor's Interview with Ivan Smalyukh", *Liq. Crystals Today* **20**, 116-119 (2011).
- Elizabeth Skwiot, "ICAM Members Honored by US President Barack Obama for Their Work" ICAM news, August 2011
- "PRESIDENT HONORS OUTSTANDING EARLY-CAREER SCIENTISTS", White House Press Release, November 5, 2010: http://www.whitehouse.gov/administration/eop/ostp/pressroom/11052010
- D. J. Broer, "Defects dictated," *Nature Materials* **9**, 99-100 (2010): a News and Views article about our paper published in the same issue [*Nature Materials* **9**, 139-145 (2010)].
- Narture Materials highlight [Nature Materials 9, 2 (2010).] about our article [C. Lapointe, T. Mason, and I.I. Smalyukh, *Science* **326**, 1083-1086 (2009)].
- Nature Photonics highlight [*Nature Photonics* **4**, 66 (2010)] about our article I.I. Smalyukh *et al*., *Nature Materials* **9**, 139-145 (2010).
- "I-CAMP 09 tours China," By Karie Friedman, ICAMNews, October 2009, http://icam-i2cam.org/icamnews/?p=303
- Our Phys Rev E paper on alignment of bacteria was featured in the Virtual Journal of Biological Physics Research.
- Nature Photonics, October 2008 issue, article by Rachel P.C. Won about the LC2CAM workshop in Boulder organized by Ivan Smalyukh: "View from LC2CAM: Flowing Crystals Glow".
- An article "Workshop on Light-Controlled Liquid Crystals Provides Shining Example" by By Karie Friedman, ICAM News, October 2008 issue: "Workshop on Light-Controlled Liquid Crystals Provides Shining Example".
- Our paper on CARS-PM imaging of LC director structures is featured in the Virtual Journal of Biomedical Optics.
- CARS microscopy textures of liquid crystals from our paper on CARS-PM imaging of LC director structures are featured on the cover page of the latest issue of Optics Express, Volume 16, issue 14

- Our paper on laser manipulation of defects is featured on the cover of Optics Express, Volume 15, issue 7
- Research highlights on the web page of ICAM: http://www.icam-i2cam.org/?page_id=7
- Cover page of the Physical Review Letters, Volume 96, issue 17; image of a liquid crystalline pattern formed by DNA from our article
- I.I. Smalyukh et al., Phys. Rev. Lett. 96, 177801 (2006) was featured by Bioinfo-online, ScienceDaily, Medical News Today, WordPress.com, and EurekAlert
- I.I. Smalyukh et al., Phys. Rev. Lett. 95, 157801 (2005) was featured by the V.J. of Nanoscale Science and Technology, Vol. 12, Issue 16 (2005)
- I.I. Smalyukh and O.D. Lavrentovich, Phys. Rev. Let. 90, 085503 (2003) was featured by the V.J. of Biophysical Research, Vol. 5, Issue 5 (2003)
- I.I. Smalyukh and O.D. Lavrentovich, Phys. Rev. E 66, 051703 (2002) was featured by the V.J. of Biophysical Research, Volume 4, Issue 10 (2002)
- Phillip Espinasse, Liquid Crystal Imaging goes 3D, OE Magazine, May 2003, Page 6.
- Patricia E. Cladis, Angew. Chem. Int. Ed., A hard look at Soft Matter, 41 (18), 3505 (2002); see also Angew. Chem. 114 (18), 3655 (2002)
- Ingo Dierking, Fluorescence Confocal Polarizing Microscopy: Imaging Liquid Crystal Director Fields in Three Dimensions, CHEMPHYSCHEM 2, 663-664 (2001)
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RESEARCH INTERESTS AND EXPERTISE

·liquid crystalline organization in synthetic and living systems; · new condensed matter phases; ·topological solitons and singular defects; ·soft condensed matter & biomolecular materials;· topological colloids; ·nano-structured materials and their applications; ·molecular & colloidal self-organization for renewable energy applications; ·aerogels and hydrogels; ·active matter; ·bacterial communities & biofilms; ·optical imaging techniques; ·structure, electro-optics, & applications of liquid crystals; ·laser trapping & manipulation; ·structure & dynamics of colloidal suspensions ·confocal, multi-photon fluorescence, CARS, SRS & other nonlinear microscopy techniques; ·topological solitons and singular defects; ·nanophotonics & plasmonics; ·materials for transparent thermal insulation; smart and privacy windows.

LECTURING

Courses Taught at CU-Boulder

Semester	Course #	Course Description
25 Spring	Phys 7430	SOFT COND MATTER PHYSICS
23 Fall	PHYS 4510	Optics
22 Fall	Phys 7430	SOFT COND MATTER PHYSICS
21 Spr	PHYS-4810	Special Topics
18 Fall	PHYS-7450	SOLID STATE THEORY II
18 Spr	PHYS-4810	Special Topics
17 Fall	PHYS-7450	SOLID STATE THEORY II
17 Spr	PHYS-4340	INTRO SOLID STATE PHYSICS
16 Fall	PHYS-7450	SOLID STATE THEORY II
16 Spr	PHYS-4340	INTRO SOLID STATE PHYSICS
15 Fall	PHYS-7430	SOFT COND MATTER PHYSICS
14 Spr	PHYS-2170	FOUNDATIONS MOD PHYSICS
13 Spr	PHYS-7430	SOFT COND MATTER PHYSICS
12 Fall	PHYS-2170	FOUNDATIONS MOD PHYSICS

12 Sum	PHYS-4810	SPECIAL TOPICS IN PHYSIC
12 Spr	PHYS-7810	SPECIAL TOPICS IN PHYSIC
11 Fall	PHYS-1230	LIGHT/COLOR NONSCIENTIST
11 Spr	PHYS-4230	THERMODYNAM STAT MECH
10 Fall	PHYS-4810	SPECIAL TOPICS IN PHYSIC
10 Spr	PHYS-7430	SOFT CONDNSD MAT PHYS
09 Fall	PHYS-1230	LIGHT/COLOR NONSCIENTIST
09 Spr	PHYS-7810	TPC-SOFT CONDENSD MATTER
08 Fall	PHYS-1230	LIGHT/COLOR NONSCIENTIST
07 Fall	PHYS-1140-110	LAB

Conference Short Courses (typically day-long)

- Short Course SC790 "Liquid Crystals: from fundamentals to applications", offered at the SPIE conferences and symposia (typically two times a year at SPIE Annual Meeting & Photonics West); taught 11 times.
- Short Course "Liquid Crystals" co-located with the "Nanophotonics" conference of the Optical Society of America, June 2007, Zhejiang University, Hangzhou, China
- Short Course "Liquid Crystals" co-located with the LCOPV workshop, August 7-10, 2010, Univ. Colorado at Boulder, USA
- Short Course "Optical manipulation and imaging of liquid crystals" Honolulu, Hawaii, September 29 – October 4, 2013

Plenary and invited conference presentations (presented & scheduled to present)

- Workshop "Topological Textures in Light, Magnetism, and Soft Matter", Max Planck Institute for the Physics of Complex Systems in Dresden, Germany, April 5–9, 2027
- Okinawa Colloids 2026, the 50th anniversary conference of the Division of Colloid and Interface Chemistry of the Chemical Society of Japan, Nago, Okinawa, 1–6 November, 2026 https://www.okinawacolloids.jp/ (**keynote**).
- The 6th International Conference on Materials – From Innovation to Translation (ICM 2026), organized by MDPI, Manchester, UK, September 16–18, 2026 (**keynote**).
- SPIE Active Photonic Platforms (APP) 2026 conference, of the Nanoscience+Engineering Symposium, SPIE Optics and Photonics, 23-27 August 2026, San Diego, CA.
- The Optics Frontier The 17th International Conference on Information Optics and Photonics (CIOP 2026) will be held in Nanjing, China from 24 to 27 July 2026 (http://ciop.com.cn/)
- International Symposium on Three-Dimensional Nanomagnetism (3DMAG 2026), Vienna (Austria), July 13–17, 2026.
- 30th International Liquid Crystal Conference (ILCC 2026), June 21- 26, 2026, Québec City, Canada (**plenary**)
- 10th International Soft Matter Conference 2026, May 25–29, 2026, at BITS Pilani, Birla Goa Campus, India (**keynote**).
- Soft Matter Photonics Workshop, Ljubljana, Slovenia, May 13-15, 2026
- Second Training School of COST Action Polytopo, Zagreb, Ruđer Bošković Institute, 11-14 May 2026.
- Workshop "A beautiful twist on condensed matter", 28 – 29 April 2026, The Royal Society, 6-9 Carlton House Terrace, London, UK
- APS Global Summit March Meeting, Denver, CO, March 16-20, 2026

- 32nd National Conference on Liquid Crystals (NCLC 2025) of the Indian Liquid Crystal Society, BITS Pilani, Pilani Campus, 20–22 November, 2025
- Kauffman International Symposium on Sustainable Mathematics Applications (8th Intl. Symp.), 17-20 November 2025, the Dusit Thani Mactan Resort, Cebu, Philippines
- The 4th International Online Conference on Materials, 3–6 November 2025 (**keynote**)
- Photonics and Electromagnetics Research Symposium, Chiba, Japan, November 5-9, 2025 (**keynote**)
- 21st Optics of Liquid Crystals Conference (OLC 2025), Kaohsiung, Taiwan, 31 August - 5 September, 2025 (**keynote**)
- Isaac Newton Institute Workshop " Recent challenges in the mathematical design of new materials", Cambridge University, UK, August 18-22, 2025
- International Liquid Crystal Elastomer Conference, Tampere, Finland, August 11-15, 2025
- Optics and Photonics SPIE Liquid Crystal Conference, 2025 SPIE Annual Symposium on Optics and Photonics, San Diego, CA, August 3– 7, 2025 (**keynote**)
- Boulder Energy and Resilient Sustainability (BEaRS) Summer Workshop, at the University of Colorado Boulder, July 16–19, 2025
- 2025 Gordon Research Conference on Liquid Crystals, Southern New Hampshire University (Manchester, New Hampshire), July 6 - 11, 2025
- Annual AAAS Fellows Forum, Washington, D.C., June 7, 2025
- The 17th European Conference on Liquid Crystals (ECLC 2025), June 1-6, 2025 in Prague, Czech Republic (**plenary**)
- Symposium "Topological Soft Matter: From Liquid Crystals to Biosystems", Center Rog in Ljubljana, Slovenia, May 21 - 23, 2025
- The 6th International Symposium for Soft Matter Science and Technology, South China University of Technology, Guangzhou, China, May 17 to 18th, 2025 (**keynote**).
- Symposium on 60th Anniversary Celebration of the Glenn H. Brown Liquid Crystal Institute, April 25th & 26th, 2025, Kent State University, OH, USA
- British Liquid Crystal Society Annual Meeting, April 7-10, 2025, Birmingham, UK (**Gray medal lecture as the BLCS Award recipient**)
- University of Birmingham Chirality & Topology Workshop, Birmingham, UK, April 4, 2025
- German Liquid Crystal Conference 2025, March 26-28, 2025, Göttingen, Germany
- 2025 APS Meeting, Joint March Meeting and April Meeting: Global Physics Summit, Anaheim, CA, Mar 16–21, 2025
- Topological Dynamics workshop at Princeton University, January 29-31, 2025
- 3rd Polish-Slovenian International Seminar on Soft Matter "Unique Critical Fluctuations: From Liquids to Nanocolloids. Show Yourself in Science", University of Maribor, Slovenia, September 26-28, 2024
- Workshop "Skyrmions in Liquid Crystals," September 9-11, 2024, Lisbon, Portugal
- The 34th International Symposium on Chirality, Chirality 2024, August 26–29, 2024, Kyoto, Japan (**plenary**)
- CU Boulder Innovation and Materials Symposium, Biotechnology Building, Boulder, August 15, 2024
- The 8th International Soft Mater Conference, Raleigh, NC, July 29-August 2, 2024 (***keynote***)
- Symposium "Mathematical Analysis of Soft Matter", June 30 to July 5, 2024, BIRS facility at The Banff Centre in Banff, Alberta, Canada

- Sol-SkyMag International Conference, June 24th-27th, 2024, San Sebastian, Spain
- American Physical Society March Meeting, Invited Tutorial on Topological Soft Matter, March 3-8, 2024, Minneapolis, USA
- Soft Robotics Workshop STORM-BOTS, Zaragoza, Spain, Feb. 1-3, 2024.
- SKCM^2 Winter School 2023, December 11, 2023 –January 12, 2024, Hiroshima, Japan
- The 20th Nano Bio Info Chemistry Symposium, Hiroshima, December 8-10, 2023
- Symposium "Dynamics & statistics of chiral topological matter", MIT, October 21, 2023.
- International Liquid Crystal Elastomer Conference 2023, ILCEC-2023, Boulder, Colorado, USA, October 8-11, 2023
- SKCM^2 Symposium for Young Scientists in Europe, Wroclaw, Poland, October 14, 2023
- SPIE Optics and Photonics Conference, 20 - 24 August 2023, San Diego, California, USA
- The 16th European Conference on Liquid Crystals (ECLC 2023) to be held at University of Calabria, Rende, Italy, from 10th to 14th July, 2023.
- 44th PIERS (PhotonIcs and Electromagnetics Research Symposium), which will be held on 3 - 6 July, 2023 in Prague, Czech Republic (EU) (**keynote**).
- Gordon Research Conference on Liquid Crystals, June 25 - 30, 2023
- 7th International Conference "Nanomagnetism and spintronics" (Sol-SkyMag 2023), San Sebastian, Gipuzkoa, Spain, June 19-23, 2023
- Workshop "Active Matter at Surfaces and in Complex Environments", Max Planck Institute for the Physics of Complex Systems in Dresden, June 19th-23rd, 2023.
- IAS NanoDisP Workshop "Nanomaterials and their applications in displays and photonics", Hong Kong, June 19-21, 2023
- Conference "Structure Design and Emerging Phenomena in Nanoparticle Assemblies", part of KITP Program, Santa Barbara, CA, May 15-18, 2023
- Vacuum Insulated Glass Summit, Lawrence Berkley National Laboratory, Berkley, CA, April 11-12, 2023
- KITP Program "Nanoparticle Assemblies: A New Form of Matter with Classical Structure and Quantum Function.", Santa Barbara, CA, March 27-May 19, 2023
- Mathematics of complex Materials Workshop/Program, Hausdorff Research Institute for Mathematics, Bonn, Germany, January 7- 12, 2023
- 2022 Annual Meeting of Taiwan Liquid Crystal Society (2022 TLCS), November 25, 2022 (**keynote**)
- Optics of Liquid Crystals Conference OLC 2022, Okinawa, Japan, September 26-30, 2022
- 6th Edwards Symposium 2022– Soft Matter for the 21st Century, 7-9 September 2022, Cambridge, UK
- The British Liquid Crystal Society (BLCS) Annual Training Workshop, Birmingham, UK, 15-17 June, 2022
- Tutorial Lecture, International liquid Crystal Conference, July 21-July 30, 2022
- Liquid Crystal Symposium "Computations and Applications of Geometrical and Topological Properties of Liquid Crystals", June 12, 2022, Tel Aviv University, Israel
- Molecular Chirality MC2021 Conference, Higashi Hiroshima, Japan, November 29-30, 2021
- Optics of Liquid Crystals Conference (OLC-2021), Okinawa, Japan, September 26-October 1, 2021
- 18th International Conference on Ferroelectric Liquid Crystals, 6-10 September, 2021, Ljubljana, Slovenia

- ACS Fall 2021 National Meeting, August 22- 26, 2021, Atlanta, GA, USA (As the Langmuir Lectureship Award recipient)
- SPIE Optics and Photonics Conference, August 1-5, San Diego, California (**keynote**)
- Workshop on "Active Matter at Surfaces and in Complex Environments", Max Planck Institute for Physics of Complex Systems in Dresden, 21 - 25 June, 2021.
- Sol-SkyMag 2021 Conference, San Sebastian, Spain, June 21-24, 2021
- 2021 ACS Colloids and Surface Science Symposium, June 14-16, 2021
- PhoBiA Annual Nanophotonics International Conference, Poland, May 26th, 2021
- DOE Workshop "Physical Behavior of Materials", Washington DC, March 10-12, 2021
- 2021 British Liquid Crystal Society (BLCS) Annual Training Workshop & Mini-symposium (virtual) "Liquid-Crystal Research in the 2020s", Birmingham, UK, January 8, 2021
- NICE-2020 International Conference, Nice, France, October 12-14, 2020 (**keynote**).
- SPIE Annual Symposium on Optics and Photonics at the San Diego Convention, 24th Liquid Crystal Conference [LCXXIV], August 23rd – 27th, 2019 (**keynote**).
- KITP Active Matter 2020 Program, UCSB, Santa Barbara, CA, March 16 – May 30, 2020.
- Workshop "New trends in the variational modeling and simulation of liquid crystals", Boltzmanngasse 9, 1090 Vienna, Austria, December 2-6, 2019, http://www.asc.tuwien.ac.at/esi-liquidcrystals2019/
- 2019 Buildings XIV International Conference, Clearwater Beach, FL, December 9-12, 2019; https://www.ashrae.org/conferences/topical-conferences/2019-buildings-xiv-international-conference
- First British-German Wilhelm and Else Heraeus Seminar Conference, at the Physik-Zentrum of the German Physical Society in Bad Honnef, Germany, December 1-5, 2019
- Symposium "Equilibrium & Beyond-Equilibrium Self-Organization in Soft Materials" at the International Materials Research Congress (IMRC), August 18-23, 2019, Cancun, Mexico
- ARPA-E Summit, Gaylord Rockies, Denver, Colorado, July 8-10, 2019
- 5th EOS Conference on Optofluidics, the World of Photonics Congress, Munich, Germany, June 24-27, 2019.
- 5th International Workshop on Topological Structures in Ferroic Materials, in Prague - Pruhonice, June 16–20, 2019
- Soft Matter Materials - Mathematical Design Innovations, Newton Institute, Cambridge University, Cambridge, UK, May 20, 2019.
- Workshop "Optimal design of soft matter", Newton Institute, Cambridge University, Cambridge, UK, 13 to 17 May, 2019.
- British Liquid Crystal Society annual conference, 15th to 17th of April, 2019, Leeds University, UK (**plenary**).
- Topology Symposium, University of Birmingham, Birmingham, UK, April 11, 2019
- The 8th International Symposium on Liquid Crystal Photonics (SLCP), March 29th-31st, 2019 in Guangzhou, China (**plenary**).
- Physical Behavior of Materials, DOE Workshop, Gaithersburg Marriott Washingtonian Center, March 19-21, 2019
- Gordon Research Conference on Complex Active and Adaptive Material Systems, Ventura, California, Jan 27th - Feb 1st, 2019.
- International Young Scientist Conference, SPO 2018, October 25-28, 2018, Taras Shevchenko National University, Kyiv, Ukraine

- APS Four Corners Meeting, University of Utah, Salt Lake City, October 12-13, 2018
- The 5th International Conference on Nanomechanics and Nanocomposites (**keynote**), Fukuoka, Japan, August 22-25, 2018
- 22nd Liquid Crystal Conference [LCXXII], 2018 SPIE Annual Symposium on Optics and Photonics, San Diego, August 19–23, 2018 (**keynote**).
- West Japan Nanosheet Society Summer Camp 2018 Conference, Kaneya Annex, Iki-shi, Nagasaki, Japan, August 9-11, 2018 (**keynote**).
- Symposium of Japan Liquid Crystal Society, Fukuoka Institute of Technology, Fukuoka, Japan, August 6, 2018 (**keynote**).
- Conference "xmag 2018" in Nara, Japan, July 25-28, 2018
- International Liquid Crystal Conference ILCC 2018, ILCS Mid-Career Award (Samsung and LG Electronics) Lecture, Kyoto, July 22-27, 2018
- Conference "Topology and its Applications", July 17 - 20, 2018 (**plenary**), Western Kentucky Univ., Bowling Green, KY: https://sites.google.com/site/summertopology2018/
- The 5th Colloidal Mikado International Conference 2018, 2-4 July 2018, the University of Oxford, UK.
- Workshop "Geometry of Soft Matter" at the International Institute of Physics (IIP) in Natal, Brazil, 21-25 May, 2018.
- The 7th Symposium on Liquid Crystal Photonics (SLCP), SLCP'2018, April 13-16, 2018, Nanjing and Changshu, China: http://light.nju.edu.cn/SLCP2018
- Workshop on Device Integrated Responsive Materials, Guangzhou, China, April 7-10, 2018
- Meeting on Geometric and Topological Methods in Liquid Crystals, 3 April 2018, De Morgan House (headquarters of the London Mathematical Society), London, UK
- ARPA-e summit, Washington DC, March 13-15, 2018
- Workshop "Liquid Crystals, Soft-matter Packing, and Active Systems: Materials and Biological Applications," January 16 - 20, 2018, Institute for Mathematics and its Applications (IMA), University of Minnesota, Minneapolis, MN
- ARPA-e SHIELD annual meeting, October 10-11, Providence, Rhode Island
- 2017 Chirality in Soft Matter Workshop, November 24-26, 2017, Nagoya, Japan
- 2017 Frontiers of Photoactive Soft Matter Workshop, September 21-22, Boulder, CO, USA
- 2017 Soft Matter Gordon Research Conference, New London, NH, Aug 13-17, 2017
- 2017 France-Japan Workshop 2017 on Functional Nanomaterials and Soft Materials, July 24, 2017, University Paris Sud, Orsay, France: http://www.fit.ac.jp/~miyamoto/fr-jp-nano/
- The 10th Liquid Matter Conference http://liquids2017.ijs.si/ , July 17-21, 2017, Ljubljana, Slovenia (**keynote**).
- ARPA-e Summit, SHIELD Lecture Series Invited Lecture, Washington DC, February 27-March 1, 2017
- Photonics West 2017, Liquid Crystal Conference, San Francisco, CA, January 28 - February 2, 2017.
- Workshop "Future of the Liquid Crystal Institute", Kent State University, Kent, Ohio, December 14, 2016
- Workshop on Liquid Crystals for Photonics 2016 (WLCP 2016), September 14-16, 2016, Ljubljana, Slovenia.
- Workshop "Liquid Crystal Functional Materials," September 19-20th, 2016, Eindhoven University of Technology, the Netherlands.

- International Liquid Crystal Conference, Kent, Ohio, July 31 - August 5, 2016
- APS March Meeting, in recognition of the GSoft APS award, Baltimore, March 14-18, 2015.
- Photonics West 2016, Liquid Crystal Conference, San Francisco, February 13-18, 2016 (**keynote**).
- IPAM Workshop "Partial Order: Mathematics, Simulations and Applications," IPAM, UCLA, January 25-29, 2016
- 2015 Soft Matter Nanophotonics Symposium, Boulder, Colorado, August 21, 2015
- 2015 BioNanotechnology Summer Institute, July 27-August 7, University of Illinois at Urbana-Champaign, IL, USA
- Boulder Condensed Matter Summer School, July 6-31, 2015 (Boulder, CO)
- META 2015 conference (http://metaconferences.org/ocs/index.php/META15), New York City between August 4th and August 7th, 2015.
- 2015 Gordon Research Conference (GRC) on Liquid Crystals, University of New England (Biddeford, Maine), June 21-25, 2015
- Symposium on "Colloidal Properties of Graphene, Nanotubes and Low Dimensional Materials" at the 2015 ACS Colloids & Surfaces Symposium, June 15-17, 2015, Carnegie Mellon University, Pittsburgh, PA (**keynote**)
- International Workshop "Complex Fluids at Structured Surfaces: Theory Meets Experiment", Berlin, February 25 - 27, 2015: https://sites.google.com/site/workshopberlin2015/home
- Workshop "Soft Matter at Interfaces 2015", Ringberg, Germany, March 29-April 1, 2015.
- Symposium on Liquid Crystal Photonics (SLCP 2015), 18-22 April 2015, South University of Science and Technology of China (SUSTC), Shenzhen, China (**keynote**)
- DOE Workshop "Physical behavior of materials", Washington DC, March 29-April 1, 2015
- International Conference on Small Science (ICSS 2014), Hong Kong, China, December 8-11, 2014 (http://www.icssci.org/2014/).
- International Liquid Crystal Conference ILCC-2014 in Dublin, Ireland, June 29-July 4, 2014, http://www.ilcc2014.com
- 9th Ibero-American Workshop on Complex Fluids and 2nd Italian-Brazilian Workshop on Liquid Crystals, 14 - 18 October, 2013, Maceió, Brazil, http://www.evento.ufal.br/iberofcx/
- Optics of Liquid Crystals, OLC2013, Honolulu, Hawaii, September 29 – October 4, 2013, http://www.lcinet.kent.edu/conference/19/
- International Liquid Crystal Elastomer Conference, Shanghai, China, September 10-12, 2013 http://mse.fudan.edu.cn/ilcec7/
- Workshop "Defect-Assembled Soft Matter For Nanoscience and Biotechnology", 14-16 September 2013, Rogaska Slatina, Slovenia, http://softnano.fnm.um.si/program
- International Workshop on Nonlinear Photonics, NLP*2013, Sudak, Ukraine, September 10-11, 2013: http://lfnm.kture.kharkov.ua/page-nlp.html
- Workshop "Emergent and Adaptive Behaviors in Soft Matter and Living Systems", September 15-18, 2013, Xiamen, China: http://phys.xmu.edu.cn/xmucon2013/node/2
- Workshop "Liquid crystal defects and their geometry, active and solid liquid crystals, and related systems," Cambridge, UK, June 24-28, 2013, http://www.newton.ac.uk/programmes/MLC/mlcw04p.html
- 2013 SPIE Annual Symposium on Optics and Photonics, San Diego, August 25th - 29th 2013
- American Chemical Society Meeting, New Orleans, Louisiana, April 7-11, 2013
- APS March meeting, Liquid crystal Conference, March 18-22, 2013, Baltimore, MD

- Photonics West 2013, Conference Emerging Liquid Crystal Technologies VIII, The Moscone Center, San Francisco, February 2 - 7, 2013
- Mathematics of Liquid Crystals, Isaac Newton Institute in Cambridge, United Kingdom, 7 January - 5 July, 2013
- International Display Workshop IDW2012, Kyoto, Japan, December 4-7, 2012: http://www.idw.ne.jp/home.html
- Materials Science 2012, Chicago, October 22-24, 2012: http://omicsonline.org/materialscience2012/
- Workshop "New Horizons of Colloidal Science: Fundamentals and Applications", Sete, France, October 17-20, 2012
- Workshop on assembling of superstructures in soft matter, October 11-13, 2012, Ljubljana, Slovenia, http://www.softmatter.si/hierarchy2012
- 13th International Symposium on Colloidal and Molecular Electrooptics, Ghent, Belgium, September 2-5, 2012 (http://elopto2012.elis.ugent.be/) (**plenary**).
- The Kavli Institute for Theoretical Physics workshop on Knotted Fields, Santa Barbara, California, 18 June - 14 July, 2012 (http://www.kitp.ucsb.edu/activities/dbdetails?acro=knots-m12)
- International Material Research Conference 2012, August 12-17, Cancun, Mexico http://www.mrs-mexico.org.mx/imrc2012/
- Advanced Liquid Crystal Technologies conference, SPIE Photonics West 2012, San Francisco, USA, January 21-26, 2012.
- Conference on Current trends and Issues on Renewable Energy-2011 (CTIRE-2011), Mahatma Gandhi University, Nalgonda, India, December 19-21.
- Soft Matter Workshop, Raman Research Institute, Bangalore, India, November 9-11, 2011 (**plenary**): http://www.rri.res.in/soft_matter_chemistry_workshop.html
- Gordon Research Conference on Liquid Crystals, Mount Holyoke College, South Hadley, MA, June 19-24, 2011
- Inter-Continental Advanced Materials for Photonics 2011 (I-CAMP'11) Summer School, Montevideo - Buenos Aires – Corrientes, May 28-June 17, 2011.
- Metamaterials Workshop, Hangzhou, China, April 9-12, 2011
- Photonics West Symposium of the International Society for Optical Engineering, Conference "Emerging Liquid Crystal Technologies", January 22-27, 2011, San Francisco, USA
- Materials Research Society Fall Meeting, November 29 - December 3, 2010, Boston, USA
- Conference on Optical Trapping & Optical Micromanipulation (OTOM), San Diego, California, USA, August 1-5, 2010
- Fourth International Conference on Electroactive Polymers: Materials and Devices, November 21-26, 2010, Surajkund (India)
- 23rd International Liquid Crystal Conference ICLC2010, July 11-16, 2010, Krakow, Poland (**plenary**) http://www.ilcc2010.uj.edu.pl/
- SPIE Liquid Crystal conference XIV, part of the SPIE Annual Meeting "Optics & Photonics," August 1-4, 2010, San Diego, California, USA
- Conference "Confined Liquid Crystals: Landmarks and Perspectives", Ljubljana, Slovenia, July 19-20, 2010, (http://clc.fmf.uni-lj.si/)
- I-CAMP'10 Summer School, June 19-July 10, Sydney-Brisbane, Australia: http://icamconferences.org/i-camp2010/

- "Emerging liquid crystal technologies," Photonic West, Jan 23-28, 2010, San Francisco, CA
- I-CAMP'09 Summer School, Hangzhou-Shanghai-Qingdao-Beijing, China, June 28 - July 19, 2009
- LC Microsymposium, SIAM meeting "Mathematical Aspects of Materials Science," May 11-14, 2008
- Conference "Emerging liquid crystal technologies," Photonic West, Jan 20-25, 2009, San Jose, CA
- Conference "Nanophotonics" of the Optical Society of America, June 17-22, 2007, Hangzhou, China
- Conference "Emerging liquid crystal technologies," Photonic West, Jan 20-25, 2007, San Jose, CA
- 21st International Liquid Crystal Conference, ICLC2006, July 2-6, 2006, Keystone, CO (**plenary**)
- 19th International Liquid Crystal Conference, ICLC2002, 30 June – 5 July, Edinburgh, UK, as the winner of the 2002 International Liquid Crystal Society Multimedia Prize
- Light and Optics in Biomedicine 2002 (LOB2002), October 23-24, 2002, Warsaw, Poland

Invited Colloquia and Seminars

- GEOTOP-A seminar, international web-based seminar series, January 16, 2026
- Seminar, Basque Center for Applied Mathematics (BCAM), Bilbao, Spain, October 3, 2025
- Seminar, Helmholtz-Zentrum Dresden-Rossendorf, Intelligent Materials and Systems, Dresden, Germany, March 28, 2025
- Colloquium, Max Planck Institute for Dynamics & Self-Organization, Gottingen, March 26, 2025
- Max Planck Institute of Colloids & Interfaces Seminar, Potsdam-Golm, Germany, March 23, 2025
- WPI- SKCM2 Seminar, Hiroshima University, Japan, March 7, 2025
- Physics Colloquium, Harvard University, February 24, 2025
- Colloquium, Max Planck Institute for Dynamics and Self-Organization, March 26, 2025, Göttingen, Germany
- Seminar at the Research Center for Materials Nanoarchietonics, WPI-MANA, National Institute for Materials Science, Tsukuba, Japan, December 23, 2025
- Physics Colloquium, University of Colorado Boulder, October 16, 2024
- Seminar, Department of Physics, The Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong, January 2, 2024
- Seminar of the department of mechanical engineering and materials science, Duke University, October 18, 2023
- Department of Optics and Photonics, National Yang- Ming Chiao Tung University (NYCU), Hsinchu, Taiwan, December 30, 2022
- Chemical Engineering Seminar, Department of Chemical Engineering, National Taiwan University, Taiwan, December 39, 2022
- Physics Colloquium, Department of Physics, National Cheng Kung University, Tainan City, Taiwan, December 28, 2022
- Materials Sciences seminar, National Chung Hsing University, Taiwan, December 27, 2022
- Chemical and Biological Engineering Seminar, Ohio State University, September 22, 2022

- Physical Chemistry Seminar, ETH Zurich, Zurich, Switzerland, July 12, 2022
- Physics Seminar, Leiden University, Leiden, The Netherlands, July 7, 2022
- Physics Seminar, Utrecht University, Utrecht, The Netherlands, June 27, 2022
- Nonlinear Sciences Seminar Series, Hebrew University, June 15, 2022
- Inst. for Molecular Studies, Technical Univ. of Eindhoven, the Netherlands, June 9, 2022
- Weizmann Institute, Department of Physics Seminar, March 8, Israel
- Tel Aviv University Biosoft Seminar, February 23, Tel Aviv, Israel
- University of Tokyo Statistical Physics Seminar, January 11, 2022
- AIST Sustainable Chemistry Seminar, Higashi Hiroshima, Japan, January 5, 2022
- Topology and Geometry Seminar Series, Hiroshima University, Japan, December 7, 2021
- International Course on Chirality, Tutorial Lecture on Hopfions, December 6, 2021
- NanoLSI WPI Seminar Series, Kanazawa University, Kanazawa, Japan, November 26, 2021
- Hiroshima University CRESCENT Seminar Series, Japan, November 1, 2021
- Polymer Science & Engineering Seminar, University of Massachusetts, Amherst, February 19, 2021
- Physics Colloquium (virtual), University of Lisbon, Portugal, November 10th, 2020
- Physics Seminar, South China Normal University, Guangzhou, China, December 27, 2019
- Physical Mathematics Seminar, MIT, Boston, November 26, 2019
- Materials Colloquium at UC Santa Barbara Materials Science Engineering Department, UC Santa Barbara, CA, September 27, 2019
- Newton Institute Seminar, Cambridge University, UK, May 29, 2019
- LCI Colloquium/Seminar, Kent State University, Ohio, USA, May 22, 2019.
- Seminar at the School of Chemistry, University of Birmingham, Birmingham, UK, March 15, 2019
- Physics Colloquium, School of Physics, University of Birmingham, Birmingham, UK, March 13, 2019
- Physics Colloquium, South China Normal University, Guangzhou, China, December 26, 2018
- SPIE Visiting Lecturer Seminar, University of Calgary, Canada, November 23, 2018
- Physics Colloquium, University of Tennessee, Knoxville, TN, October 8, 2018
- Seminar at the Department of Chemical and Biological Engineering, University of Colorado Boulder, CO, September 11, 2018
- Seminar at the Department of Physics, Faculty of Sciences, KyuTech, Japan, September 4, 2018
- Seminar at the Department of Chemistry, University of Kyoto, Kyoto, Japan, July 25, 2018
- Seminar at the Materials Science and Engineering Institute, Kyushu University, Fukuoka, Japan, July 11, 2018
- Colloquium at the Department of Physics, Kyushu University, Fukuoka, Japan, July 10, 2018
- Physics Colloquium, University of Ljubljana and Joseph Stephan Institute, Ljubljana, Slovenia, June 1, 2018
- Colloquium for the Center for Nonlinear Studies, Los Alamos National Laboratory, Los Alamos, May 16, 2018
- HUST Physics and Chemistry Colloquium, HUST, Wuhan, China, April 10, 2018
- Beijing Nanoscience Institute Seminar, Beijing, China, April 6, 2018
- Beijing University of Aeronautics and Astronautics (BUAA) Physics Colloquium, Beijing, China, April 5, 2018

- Beijing University of Aeronautics and Astronautics (BUAA) Physics Colloquium, Beijing, China, April 5, 2018
- Seminar series "Computations in Science", Physics Department, University of Chicago, February 21, 2018
- Saturday Physics Seminar Series Lecture, University of Colorado, January 27, 2018
- Seminar at the Buildings Energy Center, National Renewable Energy Laboratory (NREL), January 25, 2018
- Statystical Physics Seminar, Tokyo Institute of Technology, Tokyo, Japan, November 30, 2017
- Center for Emergent Matter Science (CEMS), University of Tokyo and Rinken, Tokyo, Japan, November 29, 2017
- Seminar of the Materials and Energy Device Research Center of Fukuoka Institute of Technology (FIT-ME), Faculty of Engineering, Fukuoka Institute of Technology, Fukuoka, Japan, November 28, 2017
- All-University Chiral Science Seminar Lecture, November 27, 2017, Hiroshima University, Hiroshima, Japan
- Beijing University of Aeronautics and Astronautics (BUAA) Colloquium, Beijing, China, November 23, 2017
- HUST Physics and Chemistry Colloquium, HUST, Wuhan, China, November 22, 2017
- University of Tokyo Soft Matter Seminar, Tokyo, Japan, November 21, 2017
- Physics Colloquium Lecture “Topological solitons” at the Department of Physics & Astronomy, Brigham Young University, Provo, Utah, September 20, 2017
- Physics Colloquium Lecture “Knots in soft matter” at New York University, New York, September 7, 2017
- Laboratory for Solid State Physics Seminar Lecture “Ordered gels”, University Paris Sud, Orsay, France, June 30, 2017
- Seminar “Biaxial Molecular-Colloidal Fluids,” Centre de Recherche Paul Pascal – CNRS, University of Bordeaux, Bordeaux, France, July 25, 2017
- Seminar “Nanoparticles and Einstein’s Colloidal Atoms,” Institut des Nano-Sciences de Paris (INSP), Universités Pierre et Marie Curie, Paris, France, July 10, 2017
- Saint-Gobain Recherche Seminar, UMR 125 CNRS / Saint-Gobain, Laboratoire Surface du Verre et Interfaces, Paris, France, June 8, 2017
- Ferromagnetism Seminar, Lecture “Topological solitons in colloidal chiral ferromagnets”, Laboratory for Solid State Physics, University Paris Sud, Orsay, France, June 6, 2017
- ESPCI Condensed Matter Seminar Series, Lecture “Hybrid molecular-colloidal liquid crystals” ESPCI, PSL, Paris, France, May 15, 2017
- Laboratory for Solid State Physics Seminar Lecture “Nanoparticles in Liquid Crystals”, University Paris Sud, Orsay, France, May 12, 2017
- PCT Seminar, Lecture “Topological solitons in liquid crystals and chiral ferromagnets”, Gulliver Laboratory, ESPCI, Paris, France, April 27, 2017
- Institute of Electro-Optical Engineering Seminar, National Chiao Tung University, Taiwan, December 22, 2016
- School of Chemistry and Chemical Engineering Seminar, Huazhong University of Science and Technology, Wuhan, PR China, December 20, 2016
- Physics Colloquium, University of Colorado Boulder, December 5, 2016
- Physics Colloquium, Colorado State University, Fort Callings, CO, October 17, 2016

- Physics Seminar, University of California at Merced, CA, September 9, 2016
- School of Physics Colloquium "Topological soft matter", Georgia Tech, March 28, 2016.
- Liquid Crystal Institute Seminar, Kent State University, Kent, OH, February 3, 2016
- Dept. of Electrical & Computer Engineering Colloquium "Nanocolloidal Alignment and Assembly in Liquid Crystals: From Novel Phases of Soft Matter to Tunable Plasmonic Color Filters", Ohio State University, Columbus, OH, July 7, 2015
- RXAS Seminar "Plasmonic and ferromagnetic liquid crystals", June 19, 2015, AFRL, Dayton, OH.
- Physical Chemistry Seminar "Ferromagnetic switching of solitons and structures in liquid crystals", May 21, 2015, University of Stuttgart, Germany.
- Universität Magdeburg Colloquium, "Dynamic self-co-patterning of soft matter and light: Archimedes spirals and oscillatory arrays." May 26, 2015.
- Stuttgart Physics Colloquium lecture "High-dimensional spheres and self-assembly", April 14, 2015, Stuttgart, Germany.
- University of Barcelona Applied Materials Chemistry Seminar "Hierarchical knotting in soft matter", April 10, 2015, Barcelona, Spain.
- Applied Math Seminar lecture "Topological Colloids and Handlebody-like Surface Confinement in Polymer Dispersed Liquid Crystals", Purdue University, October 15, 2014
- Saturday Physics Series lecture "Knots and Physics", University of Colorado at Boulder, March 15, 2014
- Physics Colloquium "Hyper-spheres and self-assembly of topological defects", Syracuse University, Syracuse, NY, January 16, 2014
- Physics Colloquium "Topological soft matter," University of Northern Colorado, Greeley, CO, January 23, 2013
- Condensed Matter and Biological Physics Seminar "Topological Polymer Dispersed Liquid Crystals and Colloids", Syracuse University, Syracuse, NY, January 17, 2014
- Physics Colloquium "Topological Soft Matter: From Mathematical Theorems to Self-Assembly", University of Colorado, Boulder, September 25, 2013
- Seminar "Surface anchoring mediated hierarchical self-assembly in orientationally ordered plasmonic complex fluids" for the program "Mathematical Modeling and Analysis of Complex Fluids and Active Media in Evolving Domains" the Isaac Newton Institute for Mathematical Sciences, Cambridge University, Cambridge, UK, July 16, 2013: http://www.newton.ac.uk/programmes/CFM/seminars/2013071611002.html
- Physics Seminar "Tunable self-assembly and patterning of defects in liquid crystals using light, confinement, and chirality", University of Bristol, UK, June 21, 2013
- Colloquium lecture "Defect "carving" in liquid crystals using light and colloids" in the School of Mathematics and Physics, University of Ljubljana, Slovenia, May 20, 2013
- Seminar lecture "Control of topological defects in nematic liquid crystals using topological colloids" at the Max Planck Institute for Intelligent Systems (formerly Max Planck Institute for Metals Research), Stuttgart, Germany, May 17, 2013
- Seminar "Topological defects in nematic liquid crystals dictated by topologically nontrivial confinement and colloids", for the "Mathematics of Liquid Crystals" program at the Isaac Newton Institute for Mathematical Sciences, Cambridge University, Cambridge, UK, May 7, 2013: http://www.newton.ac.uk/programmes/MLC/seminars/2013050714001.html
- Department of Chemical Engineering Seminar, Colorado School of Mines, Golden, CO,

September 28, 2012

- Applied Mathematics Colloquium, CU-Boulder, August 31, Boulder, CO-80309.
- Condensed Matter Physics Seminar, "Control of liquid crystal defects using optical phase singularities," Univ. of California at Davis, Davis, California, January 19, 2012.
- Physics Colloquium, "Optical manipulation of colloids, self-assembled, structures, and topological defects by use of laser tweezers," University of Northern Colorado, Greeley, Colorado, January 27, 2012
- Distinguished lecturer series Gateways to Emergence in Science and Society: Toward a Science of Sustainability, "Smart Materials for Sustainable Future," Univ. of California at Davis, Davis, California, January 19, 2012.
- OEQS Seminar, University of Colorado at Boulder, "Optical manipulation and nonlinear optical imaging of liquid crystals," Boulder, Colorado, March 18, 2011.
- Air Force Research Laboratory, Wright Patterson Research Laboratory, "Tunable self-assembly and self-alignment of anisotropic plasmonic nanoparticles in liquid crystals," February 18, 2011.
- Johns Hopkins University, Condensed Matter Seminar, "Light-directed self-assembly of colloids & localized particle-like structures in chiral nematic liquid crystals," February 16, 2011.
- Rice University, Chemical Engineering Department Seminar "Reconfigurable structural self-assembly & self-alignment of anisotropic nanoparticles in liquid crystals," February 10, 2011
- Physics Colloquium at the Colorado School of Mines, "Control of colloids and topological defects in liquid crystals by optical phase singularities," January 18, 2011.
- School of Mathematics Seminar, workshop on topology "Control of LC Defects using Optical Phase Singularities", Institute for Advanced Study, Princeton, October 6, 2010, http://math.ias.edu/seminars
- Physics Colloquium "Control of structures and defects in soft condensed matter by use of optical traps with phase singularities", Department of Physics, Denver University, November 3, 2010
- Condensed Matter Seminar, "Assembly and Alignment of Colloidal Particles Mediated by Liquid Crystal Defects and Elasticity", Department of Physics, University of Pennsylvania, September 29, 2010
- SPIE Visiting Lecturer Program Lecture "Laser tweezers and optical manipulation," School of Optics, The National Institute of Astrophysics, Optics & Electronics (INAOE), Puebla, Mexico, 2010
- Condensed Matter Seminar "Colloidal Self-Assembly and Self-Alignment in Liquid Crystals", Inst.for Cond. Matter Physics of the Ukrainian Academy of Sciences, Lviv, Ukraine, July 26, 2010.
- SPIE Visiting Lecturer Program Lecture "Seeing in 3D: confocal, two-photon flourescence, and CARS microscopy," Kent State University, Kent, Ohio, October 1, 2010.
- Seminar Lecture "Liquid Crystals of DNA and F-actin biopolymers," Institute of Cell Biology of the National Academy of Sciences of Ukraine, July 22, 2010
- Nonlinear Physics Center Seminar "Towards Reconfigurable Optical Metamaterials: Nanoparticle Self-Assembly and Self-Alignment in liquid crystals", Department of Physics, The Australian National University, Canberra, Australia, July 9, 2010
- Colloquium "Self-Assembled Optical Metamaterials Based on Liquid Crystals", Institute of Electro-Optical Science and Engineering (EOSE), National Cheng-Kung University (NCKU), Tainan, Taiwan, June 18, 2010

- Condensed Matter Physics Seminar "Optically-induced quasiparticles in confined chiral nematic liquid crystals", University of California at Davis, April 8, 2009
- Physics Colloquium "Contact-free Optical Manipulation of Micro- and Nano-sized Objects Using Holographic Laser Tweezers", CSU-Sacramento, April 9, 2009
- COSI Seminar lecture "Non-contact optical control of multiple defects and structures in liquid crystals using holographic and time-shared optical trapping," Engineering, University of Colorado at Boulder, February 2, 2009
- Saturday Physics Series Seminar "Laser Tweezers & Laser Shapers: Moving things without touching," Dept. of Physics, University of Colorado at Boulder, April 18, 2009
- Physical Chemistry Seminar, "Light-Controlled Liquid Crystals", UCLA, October 20, 2008
- SPIE Visiting Lecturer Program Lecture "Laser tweezers and laser shapers," Department of Physics, Taras Shevchenko National University, Ukraine, December 17, 2008
- Seminar, "Tunable self-organized and optically-generated ordered structures for electro-optic and photonic applications," Department of Applied Physics, Yale University, March 26, 2007.
- Colloquium, "Probing and Controlling Order in Soft Matter," Department of Physics, University of Colorado at Boulder, March 19, 2007.
- Colloquium, "Colloidal self-organization and optical control of structures in ordered biomolecular and soft materials," Department of Physics, Georgetown University, February 22, 2007.
- Seminar, "Artificial and natural order in biological systems: from liquid crystalline patterns of DNA to aligned bacteria," Department of Physics, Iowa State University, February 27, 2007.
- Colloquium, "Non-contact optical control in soft materials: from stretching disclinations to photonic applications," Department of Physics, Syracuse University, February 20, 2007.
- Condensed Matter Physics Seminar, "Elasticity-Mediated Colloidal Interactions and Controlled Self-Assembly in Liquid Crystals," Dept. of Physics, University of Colorado at Boulder, March 20, 2007.
- Seminar, "Self-organized periodic structures in liquid crystalline biomolecular and soft materials," Department of Physics, Clarkson University, Potsdam, NY, April 18, 2007.
- Colloquium, "Probing & Controlling Order in Soft Matter: From Confined Liquid Crystals to Aligned DNA," Department of Physics, Emory University, Atlanta, February 2, 2007.
- Condensed Matter Physics Seminar, "Elasticity-Mediated Colloidal Interactions and Controlled Self-Assembly in Liquid Crystals," Syracuse University, February 21, 2007.
- Seminar, "Self-organized structures in biological systems: from periodic patterns of DNA to aligned bacteria," San Francisco State University, February 5, 2007.
- Seminar, "Polarization-Sensitive Optical Trapping and Imaging of Ordered Structures in Soft Materials," Department of Physics, University of Missouri at Kansas City, January 29, 2007.
- Seminar, "Tunable ordered structures for photonic applications," School of Engineering, University of Dayton, Ohio, April 11, 2007.
- Seminar, "Probing and Controlling Order in Soft and Biomolecular Materials," University of California at Merced, February 7, 2007.
- Seminar, "Colloidal particles in ordered biomolecular & soft materials: from controlled self-organization to optical manipulation," Physics Department, Virginia Commonwealth University, February 16, 2007
- Seminar, "Colloidal self-organization & optical control of structures in ordered biomolecular & soft materials," Department of Physics, Kansas State University, March 1, 2007.

- Colloquium, "Colloidal interactions & controlled self-assembly in ordered soft & biomolecular materials," Dept. of Physics, Worcester Polytechnic Institute, March 5, 2007.
- Seminar, "Order in biological systems: from liquid crystalline patterns of DNA to aligned bacteria," Department of Physics, Boise State University, March 15, 2007.
- Solid State & Optics Seminar, Dept. of Applied Physics, Yale Univ., New Haven, February 14, 2007.
- Seminar, "Ordered structures and patterns of biopolymers and bacteria," Department of Physics, Florida Atlantic University, March 29, 2007.
- Seminar, "Focused Laser Beams in Liquid Crystals: 3D imaging, trapping, and manipulation," Fordham University, New York, November 9, 2005.
- Seminar, "Quantitative Study of Defects and Colloidal Interactions in Liquid Crystals Using Laser Tweezers and Fluorescence Confocal Polarizing Microscopy," University of Montpellier II, Montpellier, France, July 15, 2005.
- Seminar, "Electric-field-induced nematic-cholesteric transition and 3-D director structures in homeotropic cholesteric cells," AlphaMicron Inc., Kent, OH, January 12, 2005.
- Electro-optics Seminar, "3-D imaging of orientational structures in cholesteric liquid crystals and their electro-optic applications," School of Engineering, Univ. of Dayton, Dayton, OH, April 2, 2004.
- Seminar, "Ordered structures in liquid crystals, anisotropic emulsions and suspensions," Institute for Lasers, Photonics, and Biophotonics, State Univ. of New York at Buffalo, March 12, 2004.

GROUP MEMBERS: PhD STUDENTS, POSTDOCS & VISITING SCIENTISTS

(179 total at CU-Boulder since 2007)

The web page http://www.colorado.edu/soft-matter-physics/people lists all current & past group members, with their contact info, photos, project descriptions, etc.

CU GRADUATE STUDENTS: ***(30 total, 14 graduated with PhD and 9 graduated with MS):***

Rahul Trivedi *(PhD in ECEE received in 2012; currently a research group leader at Intel Corp.);*

Julian Evans *(PhD in Physics received in Summer 2013; currently a Professor at Zhejiang U., China);*

Mike Campbell *(MS in Physics received in Spring 2013; Mike also did his undergraduate honors thesis in our research group; currently at Washington U).*

Mike Varney *(Defended PhD in Physics in 2014; currently co-founder and Chief Scientist at Exnodes Inc);*

Angel Martinez *(defended PhD in Physics in the Fall 2014, was a postodoc in the group between January –April 2015); Received 2016 Glenn Brown Best Dissertation Award of the International Liquid Crystal Society (ILCS), currently an Assistant Professor at* Assistant Professor of Physics at North Arizona University (NAU).

Qiaoxuan Zhang *(defended MS thesis, materials Science and Engineering graduate program; Qiaoxuan was also a physics undergraduate student in our research group; graduated with MS in materials science and engineering in spring 2015 & is currently a researcher in U. of Toronto, Canada);*

Paul Ackerman *(Defended PhD in ECEE, Spring 2016). Paul also did his undergraduate honors thesis in the group, which he defended in Spring 2012; he currently is a postdoc at Princeton U.*

Ghadah H. Sheetah Al Abbas (defended PhD in September 2018, *MSE PhD work in my group supported by a fellowship from Saudi Arabia Government); She is currently an Assistant Professor of Physics at King Abdul U., Saudi Arabia (the first female professor of physics in the University).*

Ye Yuan *(*defended PhD in November 2018, *he is currently a postdoc at ETH Zurich in Switzerland);*

Julian Giller *(non-PhD research project during Summer and Fall 2013);*

Yiheng Lin *(non-PhD project within Fall 2010 – Summer 2011, co-authored one article, later did PhD at NIST-Boulder working with D. Wineland);*

Zhiyuan Qi *(non-PhD project, co-authored two articles, defended PhD with N. Clark);*

Jiaqi Li *(non-PhD project, was a research assistant working in my group in Spring 2011);*

Dennis Gardner *(non-PhD project, rotation as COSI student and two summer semesters supported by CU SMART program, Dennis also did his undergraduate honors thesis in our group; he later defended PhD working with Margaret Murnane at JILA);*

Donald Conkey *(spent COSI rotation semester in my group, I was his COSI co-advisor & Rafael Piestun is his main advisor, graduated with PhD in ECEE in the end of 2013 and I was also on the Dissertation Committee).*

Rachel Ward *(graduate work in collaboration with Paul King at NREL).*

Andrew Hess *(defended PhD in 2019, currently a postdoc at NREL).*

Sungoh Park (physics student, joined the research group in April 2015, now working on PhD at NIST Boulder while being a CU graduate student).

Allister Frazier (MSE PhD student, joined the group in the Fall 2016, graduated with MS and is now a researcher at NREL).

Joshua De La Cruz (MSE PhD student, 2015-2019).

Hayley Osman Sohn (defended PhD in 2020 and is now working for Research Square as a science communicator).

Benny Jung-Shen Tai (defended PhD in 2020, now a postdoc at Yale Univ.).

Robert Voinesku (Physics PhD student, joined the group in the Spring 2019).

Pedro de Mello (MSE PhD student, joined the group in the Spring 2021).

Jin-Sheng Wu (Chemical Physics PhD student, defended PhD in August 2025).

Rao Fei *(*MSE PhD student, defended PhD in September 2025).

Hanqing Zhao (Physics PhD student, joined the group in the Summer 2020, defended PhD in November 2025).

Gewei (Gary) Chen (Physics PhD student, joined the group in the Spring 2025).

Keita Richardson (Physics PhD student, joined the group in the Summer 2025).

Sophia Zinn (Chemistry PhD student, joined the group in the Spring 2026).

CU POSTDOCS (29 total, 6 current):

Taewoo Lee *(sinior research associate, in the group since 2008, now serving as a lab manager);*

Bohdan Senyuk *(2010-2022, now an Associate Professor at Hiroshima University, Japan);*

Haridas Mandoor *(2012-2019, now a group leader at a quantum dot company in New Jersey);*

Qingkun Liu *(2009-2018, currently Sr. Research Associate at Cornell University);*

Li Jiang *(in the research group 9/2015-11/2018, with a leave break, now a staff member at Cornell university);*

Cara Lubner *(2014-2015, Stimulated and surface enhanced Raman scattering studies of phtobiological systems and hydrogen production processes, currently a senior scientist at NREL, one joint paper)*

Clayton Lapointe *(2008- 2011, currently a lecturer at U. Fribourg, Switzerland);*

Manoj Pandey *(2011-2013, Postdoctoral Fellow supported by the* Indian Government's DST-BOYSCAST Fellowship program, currently an Associate Professor *at VSSD PG College, India).*

Dong-ki Yoon *(2009-2011, started as a visiting scientist for 2 months, was co-advised and co-sponsored jointly with Noel Clark; currently a Professor at KAIST, South Korea).*

Paul J. Ackerman *(2016-2018, also past PhD student and undergraduate Physics Honors student in our research group, currently at Princeton U);*

Blaise Fleury *(2016-2019, currently a researcher at CNRC, France)*

Yong Xie *(in the group within 8/2015-9/2016, supported by a fellowship of Chinese National Science Foundation, currently* an Asst. Prof. at BUAA, China*);*

Karthik Reddy Peddireddy *(2016-2017, working on the new ARPA-e project, one paper pubished).*

Eldho Abraham *(2017-present, working on the ARPA-e project, now promoted to the position of a senior research associate in the group).*

Vladyslav Cherpak *(2018-2024, working on the new ARPA-e project on thermoelectrics).*

Zezhang Chen *(2018-2020, liquid crystal waveguiding and cholesteric cellulose nanocrystal based reflectors, currently a professor in China).*

Ye Yuan *(2019-2020, working on the DOE project, currently doing his 2nd postdoc at ETH-Zurich, Switzerland).*

Jan Bart ten Hove *(2019-2022, currently a senior researcher in the Netherlands).*

Adam Ollanik *(2019-2023).*

Noah Kent *(2020-2021, currently doing his second postdoc at MIT).*

Cuiling Meng *(2020-2022, currently an assistant professor in Chengdu, China).*

Andrii Repula *(2019-2024), currently at Lumencor, Inc., Portland, Oregon.*

Souvik Ghosh *(2020-2024), currently Sr. Engineer at Micron Technology*

Amit Bhardwadj *(2023-2025).*

Olena Iadlovska *(2023-2025).*

Jin-Sheng (Jason) Wu *(2025-present).*

Alex Adaka *(2025-present).*

Shiva Singh *(2025-present).*

Hanqing Zhao *(2025-present).*

CU UNDERGRADUATE STUDENTS (86 total):

Holland Karaghiaulleian, *REU Student, Summer 2025*

Abram Fluckiger, *CU undergraduate Student, doing research since Fall 2025*

Lucas Rossi, *CU undergraduate Student, doing research since Fall 2025*
Ramiro Garcia Viada*, Physics undergraduate, 2023-2025*
Nicholas Golden*, 2021-2025, now a PhD student at U-Chicago*
Jorge Martinez Martin*, Physics undergraduate, 2023-2025*
Parker Kronar*, Physics undergraduate, 2021-2024*
Darian Hall *(CU Physics Student, UROP program, Fall 2019-Spring 2022), now a PhD student at UC-Berkley*
Steven G. Morrison*, CU SPUR Student, Summer 2019*
Kevin Crust*, Summer REU Student, Summer 2019*
Musqan Nighojkar *(CU Engineering Physics, working on dynamics of monopoles and topological solitons in liquid crystal ferromagnets)*
Richmond E. Adufu *(CU Physics Student, UROP program, in the group since Summer 2019)*
Yuhan Wang *(CU Physics Student, UROP program, graduated with honors Summa Cum Laude in Spring, 2019)*
Trevor Stanley *(CU Economics Student, working on technology to market aspects of the ARPA-E project on smart windows, graduated with honors Summa Cum Laude in Spring, 2019)*
Varun Chandrasekar *(CU Physics Student, UROP program, graduated with honors Summa Cum Laude in Spring, 2019)*
Changda Darren Liu *(CU Physics Student, UROP program, graduated with honors Summa Cum Laude in Fall, 2018)*
Andrew J. Seracuse *(CU Physics Student, UROP program)*
Ghaneema Nasser Abuhaimed *(CU Physics Student, UROP program)*
Dane Fisher *(CU Physics Student, UROP program)*
Andrew J. Funk *(CU Physics Student, Research Project Supported by Saudi Arabia Goverment)*
Mahmoud Almansouri *(CU Physics Student, UROP and independent study programs)*
Kenneth McCarthy *(CU Physics Student, UROP program)*
Jaskaran Singh *(CU Physics Student, UROP program)*
Philip David Nystrom *(CU Physics Student, UROP program)*
Yasser Abdullah Albarakat *(CU Physics Student, UROP program)*
Julianna Bourgeois *(CU Physics Student, UROP program)*
Bryce Reiber *(CU Physics Student, UROP program)*
Guoqing Wei *(CU Physics Student, UROP program)*
Trent Bohl *(CU Astronomy Undergraduate Student)*
Camilla Lambrocco *(CU Physics Student)*
Michael A. Paul *(CU Physics Student, UROP program)*
Owen Puls *(Summer 2014 REU Student supported through the Physics-JILA REU Program)*
Isaac Hanemann *(CU Physics Student, UROP program)*
Benjamin Krug *(CU Physics Student, UROP program)*
Leonardo Hermosillo *(CU Physics Student, UROP program)*
Ephraim Bililign *(Summer 2014 REU Student, supported through the Physics-JILA REU Program)*
Timothy Boyle *(CU Physics Student, UROP program, defended Physics Honors Thesis in 2017)*
Brendan Evers *(CU Physics Student, UROP program)*
Isaac Hanemann *(CU Physics Student, UROP program)*

Frederick M. Thayer (Ted) *(CU Engineering Physics Student, Independent Studies / UROP)*

John (Gentry) Wright *(CU Physics Student, UROP program)*

Tianyi Yan *(CU Physics student, currently volunteering)*

Mason McNutt *(CU EPEN student, supported by the DLA program)*

Blake Reimer *(CU Physics Student, UROP program)*

Jared C. Stanley *(CU Student, UROP Program)*

Paul Ackerman *(did 2.5 years of undergraduate research and an honors project in the group, was supported by UROP and REU, currently a CU ECEE graduate student)*

Qiaoxuan Zhang *(Physics Student, was working as an undergraduate researcher within Fall 2012-Summer 2013, currently MSE graduate student)*

Michael George Campbell *(CU Physics Student, did his honors thesis in the group, was partially supported by my NSF CAREER, later also did MS in his group, and is now continuing at Washington U.)*

Julian Giller *(Summer 2011 REU Student supported through the LCMRC REU Program, later returned to CU as a Physics PhD student)*

Mauricio Juanes Laviada *(Exchange Student, Technological University of Monterey, supported by UROP and taking the independent studies course with me)*

Dennis Gardner *(my first CU Student, supported through the SMART and UROP Programs while an undergraduate, did his honors thesis in the group)*

George W. Fosmire *(CU Student, assisted with a collaborative CU-NREL project on cyanobacteria)*

Eric Junkins *(CU Student, supported by the UROP Program)*

Timothy J. Callahan *(CU Student, supported by the UROP Program, co-authored the article #5 in my CV publication list)*

Nikola Maksimovic *(CU Student, Fall 2012 semester)*

Joseph Keuhlen *(CU Student, supported by the UROP Program)*

Rayshan Visvanathan *(CU Physics Student, supported by the UROP program; Rayshan is now applying to the CU MSE program to start from Spring 2014)*

Jasmine Brewer *(CU Student, co-sponsored by Prof. Smalyukh's NSF Career Grant and DLA Program of CU Boulder)*

Derek Gann *(CU Student, co-sponsored by Prof. Smalyukh's NSF Career Grant and DLA Program of CU Boulder, co-authored the article #5 in my CV publication list, graduating with Honors Thesis based on research in our group, Spring 2014).*

Anna McLeland *(Student, co-sponsored by Prof. Smalyukh's NSF Career Grant and DLA Program of CU Boulder, DLA Program's best paper awardee in Spring 2012)*

Bennet Schwab *(CU Student, supported by the UROP program)*

Wren Suess *(CU Student, supported by the UROP program)*

Dylan Warburg *(CU Student, supported by the UROP Program)*

Kristina Callaghan *(CU Student, supported by the UROP and NIH undergraduate research training programs, did her honors thesis in my group and is currently a PhD student at Harvard)*

David Glugla *(CU Engineering Physics Student, co-supported by my NSF CAREER and CU DLA Program, did his honors thesis based on research in our group, currently pursuing PhD in the ECEE department at CU)*

Elise Wright *(Summer 2013 REU Student)*

Jin-Young Park *(CU Student, supported by the CU UROP program)*

Christopher Twombly *(CU Student, supported by the UROP Program, also took the "Independent Studies" course with me, currently a PhD student in Physics/Engineering in the Colorado School of Mines)*

Benjamin Gutierrez Pacheco *(CU Student, supported by the UROP program, co-authored the article #15 in my publication list)*

Audrey Burkart *(Summer 2012 REU Student)*

Brett Gedvilas *(CU Student, supported by the UROP Program, also did independent studies course with me and was working on a collaborative project with NREL)*

Brice Lucero *(CU Student, supported by the UROP program and was also doing research as a volunteer, is a co-author on a manuscript #96 currently under review)*

Sharla Hopkins *(REU Student, Summer 2009, co-authored the Phys Rev Lett articles in 2010)*

Pegah Naeimi *(CU Student, supported by the UROP program and by grants from ICAM and from the CRDF, visited the Raman Research Institute in India for 2 months and Inst. for Condensed Matter in Ukraine for 2 months, was one of my 3 first CU undergraduates)*

Gabriel Stockdale *(Summer 2008 REU Student, co-authored article # 87 in my publication list)*

Tracy Babb *(CU Engineering Physics Student, supported by the DLA Program)*

Thomas Abel Manchego *(CU Student, supported by the UROP program)*

Cassady Rupert *(a student from Cornell University who volunteered to do research in my laboratory during the summer 2012 and was working in the lab for about two months)*

Dan Li *(Summer 2011 REU Student)*

Corinne Beier *(CU Student, supported by UROP and REU Programs, currently pursuing a PhD in the University of California, co-authored articles #27 and #31 in my publication list)*

Tyler Wingfield *(CU Student, co-supported by my NSF CAREER and the CU DLA and UROP Programs, did his honors thesis based on the research in the group)*

Yi-Ting Song *(CU Student, supported through the UROP program)*

Bethany Wilcox *(CU Student, UROP Program, now a CU Physics PhD student)*

Sabrina Thompson *(REU Student, Summer 2010)*

Ryan Young *(CU Student, supported by the UROP Program)*

HIGH SCHOOL STUDENTS (9 total):

Jeffrey Hew *(High School Student collaborating with Prof. Smalyukh and PhD student Josh De La Cruz on cholesteric cellulose-based optical reflectors, summer 2019).*

Peter Zhong *(High School Student collaborating with Prof. Smalyukh and Postdoctoral Fellows Ye Yuan and Haridas Mundoor on hybrid molecular colloidal liquid crystals, summer 2019).*

Theo Tsal *(High School Student collaborating with Prof. Smalyukh and PhD student Josh De La Cruz on cellulose-based low-e films for smart window applications, summer 2019).*

Anila Narayana *(High School Student collaborating with Prof. Smalyukh and PhD student Hayley Osman Sohn on solitons in chiral liquid crystals, 2016-2017).*

Samuel Yuandong Fei *(High School Student collaborating with Prof. Smalyukh and PhD student Josh De La Cruz on Enhancing Mechanical Integrity and Optical Clarity of Reflective Nanocellulose-based Solid Photonic Structures, June-August, 2017)*

Evan Kolderup *(High School Student collaborating with Prof. Smalyukh and PhD student Josh De La Cruz on Methods of Aerogel Monolith Fabrication for Window Retrofitting Applications, June-August, 2017)*

Jason Lehrfeld *(High School Student collaborating with Prof. Smalyukh and PhD student Josh De La Cruz on Cellulose Nanofiber Synthesis for Flexible and Transparent Aerogel Composite Materials, June-August, 2017)*

Julie Lampert *(High School Student collaborating with Prof. Smalyukh and PhD student Josh De La Cruz on cellulose nanocrystals self-assembly crystals, June-August, 2018)*

Alex Nelson *(High School Student collaborating with Prof. Smalyukh and PhD student Josh De La Cruz on liquid crystals for smart window film applications, June-August, 2018)*

VISITING SCIENTISTS (33 TOTAL):

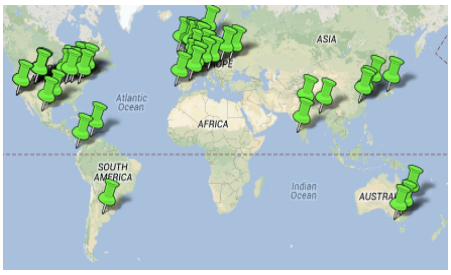
• Visiting Faculty (8 total): ***Mykola Tasinkevych*** *(University of Lisbon, Portugal);* ***Dagang Liu*** *(Professor at Nanjing University, China, on fellowship for one year);* ***Hector Mireles*** *(professor at CSU-Pomona, on sabbatical in the group);* ***Raj Kumar Gupta****, Visiting Associate Professor from Department of Physics, Birla Institute of Technology and Science, Pilani, India;* ***Andrij Trokhymchuk*** *(professor at Lviv Polytechnic and Inst. Cond. Matter Phys., Lviv, Ukraine);* ***Ramarao Pratibha*** *(Professor at the Raman Research Inst., India);* ***Ruwang Sung*** *(Professor at the University of Northern Colorado);* ***Michal Wojcik*** *(Senior Scientist at the University of Warsaw, Poland).*

• Visiting PhD students and Postdocs (23 total): ***Shakshi Bhardwadj****, Fulbright Visiting Student Researcher, visiting from Indian Inst. of Technology;* ***Dominika Benkowska-Biernacka****, U Wroclaw, Poland;* ***Zhijian Mai*** *(SCNU, Guangzhou, China),* ***Junyan Zhang*** *(Dahua Univ., Shanghai, China),* ***Dominika Benkowska-Biernacka*** *(Wroclaw University of Science and Technology, Poland),* ***He Zhou*** *(SCNU, Guangzhou, China),* ***Yang Jiang*** *(Dahua Univ., Shanghai, China),* ***Xie Yong*** *(China),* ***Q. Liu*** *(China),* ***R. Deb*** *(India),* ***O. Trushkevych*** *(Cambridge Univ., UK),* ***D. Engstrom*** *and* ***M. Persson*** *(Sweden),* ***S. Anand*** *(UK),* ***I. Klevets*** *(Lviv Polytechnic National Univ., Ukraine),* ***T. Dutta*** *(India),* ***N. Petit-Garrido*** *(Univ. of Barcelona, Spain),* ***J. Zhao*** *(Fudan Univ., China),* ***B. Dan*** *(Rice Univ.),* ***Y. Izdebskaya*** *(Nonlinear Physics Centre of Australian National University, Canberra, Australia),* ***V. Panov*** *(Trinity College, University of Dublin, Ireland),* ***J. Alonso López Medina*** *(Universidad del Valle, Cali, Colombia),* ***Philipp Wilhelm*** *(University of Regensburg, Germany),* ***Yuan Zhang*** *(Zhejiang University, China).*

UNDERGRADUATE HONORS DIPLOMA STUDENTS (16 total):

Nicholas Golden, Darian Hall, Yuhan Wang, Trevor Stanley, Varun Chandrasekar, Changda Darren Liu, Michael G. Campbell, Derek G. Gann, Paul J. Ackerman, Dennis F. Gardner, Kristina Callaghan, Tyler Wingfield, David Glugla, Timothy Boyle, Andy (Andrew) Seracuse, Yasser Albarakat

COLLABORATORS (http://www.colorado.edu/soft-matter-physics/collaborations)



• Won Park, Rafael Piestun, Dave Walba, Prashant Nagpal, Noel Clark *(UC-Boulder);* ***• Matteo Pasquali*** *(Rice Univ.);* ***•Randall Kamien, Arjun Yodh, Tom Lubensky*** *(UPenn);* ***• Tim White, A. Urbas*** *(AFRL, Dayton, Ohio);* ***• Mark Bowick, Zvonimir Dogic*** *(UCSB);* ***• Tom Mason*** *(UCLA);* ***• Hector Mireles*** *(CSU-Pomona);* ***• Paras Prasad*** *(SUNY -Buffalo);* ***• Jorn Dunkel*** *(MIT);* ***• Marjolein Dijkstra*** *(Utrecht University, the Netherlands);* ***• Yair Shokef*** *&* ***Boris*** *(Utrecht University, the Netherlands);* ***• Andrey Leonov,*** *(Univ. Hiroshima, Japan);* ***• Oksana Trushkevych, William Crossland*** *(Cambridge Univ., UK);* ***• Dick Broer,*** *(Eindhoven Univ. Technology, The Netherlands);* ***• Mauricio Nobili*** *(Univ. Montpellier, France);* ***• Sailing He*** *(ZJU, China and Royal Inst. Technology, Sweden);* ***• Gerard Wong*** *(UCLA);* ***• Chuck Gartland, Antal Jakli, Oleg Lavrentovich, Liang-chy Chien, Peter Palffy-Muhoray*** *(Kent State U.);* ***• Sandeep Kumar & Nelamangala Madhusudana*** *(Raman Research Inst., India);* ***• Tamash Kosa, Volodymyr Bodnar, Bahman Taheri*** *(AlphaMicron*

Ijnc.); • ***Joe Haus & Quan Zhan*** *(Univ. Dayton);* • ***Aric Sanders, M. Keller & Kris Bertness*** *(NIST);* • ***Andrij Trokhymchuk, Ivan Klevets*** *(ICMP, Ukraine);* • ***Sergio Restaino*** *(NRL);* • ***Brian Gregg, Jao van de Lagemaat, R. Tenent, and Paul King*** *(NREL);* • ***Patrick Keller*** *(M. Curie Inst, France);* •***Halina Rubinsztein-Dunlop*** *(Univ. Queensland, Australia);* •***Robert Leheny*** *(Johns Hopkins Univ.);* ***Yuri Kivshar, A. Miroshnichenko*** *(Australian Ntl. Univ., Australia);* ***Yanley Yu*** *(Fudan Univ., China);* ***Siegfried Dietrich, Mykola Tasinkevych*** *(Max Planck Inst., Germany);* •***Miha Ravnik, Simon Copar, Slobodan Zumer*** *(U. Ljubljana, Slovenia);* •***Jun-ichi Fukuda*** *(AIST, Japan);* •***Victor Pergamenshchik, Stanislav Chernyshuk*** *(T. Shevchenko Univ., Ukraine);* •***Tanniemola Liverpool, Mark Dennis*** *(U. Bristol, UK).* •***Nuno Silvestre,*** *(Universidade de Lisboa, Portugal);* • ***F. Sagués, Jordi Ignés-Mullol*** *(U. Barcelona, Spain);* •***Nathan Jenness*** *(University of Rochester);* •***H.-T. Jung*** *(Korea Advanced Institute of Science and Technology, Korea);* •***Christoph Blanc, Mauricio Nobili*** *(U. Montpelier, France);* •***Philippe Poulin*** *(CNRS and Univ. Bordeaux, France);* •***J. Yeomans*** *(Oxford University, UK).*

SYNERGISTIC ACTIVITIES

• ***ADVISOR*** *– REU students, students from the CU Summer Multicultural Access to Research Training (SMART) program, Univ. of Colorado SPIE student Chapter, PhD students and postdocs*; • ***FACULTY ADVISOR*** – CU-Boulder Student Chapters of the International Society for Optical Engineering (SPIE, 2008-present) and Materials Research Society (MRS, 2009-2013); • ***DIRECTOR*** – International Institute for Sustainability with Knotted Chiral Meta Matter ($SKCM^2$); • ***ORGANIZER*** *– CU-Boulder Branch of ICAM-I2CAM, Great Lakes Chapter of SPIE & SPIE/OSA student chapters at Kent State Univ. and Univ. of Colorado SPIE student Chapter*, *Outreach Days at High Schools, Science Tours for School Students, Career Development Workshops for students and postdocs*; • ***MEMBER*** **-** *ICAM-I2CAM Board of Governors & Fellowships Committee, SPIE Scholarships & Grants Committee & Chapters Task Force, conference program committees;* • ***CHAIR*** *– Soft Matter Oversight Committee of the International Institute for Complex Adaptive Matter (I2CAM);* • ***LECTURER*** – SPIE & OSA *conference short courses (such as SPIE SC790 conference short course)* on Liquid Crystals, undergraduate courses such as "Light & color"; *SPIE Traveling Lecturer Outreach Program;* •***EDITORIAL BOARD*** **–**International Journal *Advances in Cond. Matter Physics; J. of Physical Chemistry and Biophysics;* • ***DEVELOPER*** – Web-based tutorials (ILCS MultiMedia Prize).

MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

2000-present	American Physical Society (APS), **Fellow**, GSoft topical group, and APS 4-Corners Regional Section
2001-present	International Liquid Crystal Society (ILCS, lifetime member)
2002-present	International Society for Optical Engineering (SPIE, **Fellow**, lifetime member)
2002-present	Optical Society of America (OSA, **Fellow**)
2004-present	American Association for the Advancement of Science (AAAS, **Fellow**)
2004-present	International Institute for Complex Adaptive Matter (ICAM-I2CAM)
2006-present	Shevchenko Scientific Society
2007-present	Materials Research Society (MRS)
2012-present	American Chemical Society (ACS)

GALLERY of SELECTED JOURNAL COVER PAGES

LANGUAGES

English, Ukrainian (Native) & Polish

WEB PAGES WITH ADDITIONAL INFORMATION

Research group web page: ***http://www.colorado.edu/soft-matter-physics/***
Current & past group members: ***http://www.colorado.edu/soft-matter-physics/people***
Publications: ***http://www.colorado.edu/soft-matter-physics/publications***
Facilities: ***http://www.colorado.edu/soft-matter-physics/content/experimental-facilities***
Collaborations: ***http://www.colorado.edu/soft-matter-physics/collaborations***
Funding: ***http://www.colorado.edu/soft-matter-physics/funding***
WPI-SKCM2 web page: ***https://wpi-skcm2.hiroshima-u.ac.jp***