

IVAN I. SMALYUKH

Curriculum Vitae

CONTACT INFORMATION

University of Colorado at Boulder
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Research ID: C-2955-2011

H-index 52, based on Google Scholar, 8/20/19

APPOINTMENTS / EMPLOYMENT

- 2017-present: Professor (with tenure), Department of Physics and Liquid Crystal Materials Research Center, 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
- 2014-present: Associate Professor (with tenure), Department of Physics and Liquid Crystal Materials Research Center, University of Colorado, Boulder, CO 80309
- 2014-present: Associate Professor (courtesy appointment), Department of Electrical, Computer, and Energy Engineering, University of Colorado at Boulder, Boulder, CO 80309
- 2012-present: Fellow and Executive Committee Member, Materials Science and Engineering Graduate Program, University of Colorado at Boulder, Boulder, CO 80309
- 2009-present: Fellow of the Renewable & Sustainable Energy Institute (RASEI), Joint Institute of NREL and 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

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|-------------|------------------------------|---------------------------------------|
| 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

- 2019 Distinguished Visiting Fellowship, Institute for Advanced Study, University of Birmingham, UK
- 2019 Visiting Fellowship, Newton Institute, University of Cambridge, 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

Research Funding (<http://www.colorado.edu/soft-matter-physics/funding>):

- (1) ARPA-e DOE grant, Amount: **\$2,650,000** (including cost share); Proposal title: “Nanofabricated thermoelectrics for waste heat recovery.” Duration: 2/2019-2/2022. Role: Co-PI (co-PI’s share is ~\$750,000, including cost share).
- (2) ARPA-e DOE grant, Amount: **\$1,777,000** (including cost share); Proposal title: “Sacalable Advanced Insulation Retrofits from Flexible Inexpensive Lucid Materials (AIR FILMs) for Single-Pane Windows.” Duration: 2/2019-9/2020. Role: PI.
- (3) DOE BES Grant from the Bioimaging BES Program, Amount: **\$1,500,000**; Proposal title “Super-resolution imaging of cyanobacteria”; Duration: 9/2018-8/2021; Role: Co-PI (co-PI’s fraction is \$750,000).
- (4) NSF Grant, Condensed Matter Physics Program, Division of Materials Research (DMR), Amount: **\$497,000**; Proposal title “Topological solitons in liquid crystals and colloids.” Duration: 6/2018 - 5/2021. Role: PI.
- (5) DOE Grant from the Physical Behavior of Materials Program, Amount: **\$570,000**; Proposal title “Stimuli-Responsive Mesostructured Hybrid Materials” Duration: 7/2018-7/2021; Role: PI.
- (6) ARPA-e grant, Amount: **\$1,950,000** (including cost share); Proposal title: “Advancing Insulation Retrofits from Flexible Inexpensive Lucid Materials (AIR FILMs) for Single-Pane Windows.” Duration: 11/2016-2/2019. Role: PI.
- (7) NREL Grant/Subcontract, Amount: **\$285,000**; Proposal title “Basic studies of plasmon-exciton interactions”; Duration: 3/2016-3/2019; Role: PI.
- (8) NSF Grant, Condensed Matter Physics Program, Division of Materials Research (DMR), Amount: **\$390,000**; Proposal title “Self-assembly of Topologically Distinct Colloid Particles in Partially Ordered Fluids.” Duration: 9/2014 - 8/2017. Role: PI.
- (9) DOE Early Career Award, Amount: **\$799,500** (with equipment supplement); Proposal title “Nanostructured Colloidal Self-Assembly and Controlled Alignment of Anisotropic Nanoparticles”; Duration: 7/2013-7/2018; Role: PI.
- (10) NSF Soft Materials Research Center (MRSEC), Amount: **\$12 million**, Smalyukh’s portion **\$633,000** student, postdoc and materials/supplies support and **\$250,000** for equipment; Proposal title “Soft Materials Research Center”; Duration: 11/2014-10/2020; Role: SI
- (11) A grant from the State of Colorado Advanced Industries AIA OEDIT. Amount: **\$180,000**; Proposal title “Switchable plasmonic nanoparticle codispersion for smart window applications.” Duration: 1/2015 - 4/2017. Role: PI.
- (12) A grant from the ACS Petroleum Research Fund (PRF). Amount: **\$100,000**; Proposal title: “Two-photon photopolymerization of complex-shaped particles.” Duration: 9/2014 - 8/2016. Role: PI.
- (13) PECASE / NSF CAREER Award, Amount: **\$620,000**; Proposal title “Electrically- and Optically-Controlled Self-Assembly in Liquid Crystals”; Duration: 1/2009-12/2013; Role: PI
- (14) NSF International Materials Institute (IMI program) Grant from the NSF, Amount: **\$5 million**, Smalyukh’s portion **\$200,000** for organizing I-CAMP schools and **\$250,000** for exchange visitors and postdoc support; Proposal title “I2CAM - International Institute for Complex Adaptive Matter”; Duration: 8/2009-7/2015; Role: co-PI.
- (15) NSF Liquid Crystal Materials Research Center (MRSEC), Amount: **\$7.5 million**, Smalyukh’s portion **\$410,000** student support and **\$430,000** for equipment; Duration: 8/2008-8/2014; Role: SI
- (16) NREL Grant/Subcontract, Amount: **\$282,000**; Proposal title “Basic microscopic and spectroscopic studies of plasmon-exciton interactions using nanoparticle manipulation by liquid crystals”; Duration: 5/2016-4/2019; Role: PI.

- (17) DOEd Grant, Amount (Smalyukh's portion): **\$133,266**; Proposal title "Graduate Program in Liquid Crystal Science and Technology (GAANN)"; Role: co-PI.
- (17) NREL Grant/Subcontract, Amount: **\$357,000**; Proposal title "Basic studies of plasmon-exciton interactions"; Duration: 2/2011-2/2016 (extended once); Role: PI.
- (18) Air Force Research Lab Grant/Subcontract, Amount: **\$55,000**; Proposal title "Study of Dynamic Optical Materials"; Duration: 8/2013-11/2014; Role: PI.
- (19) NREL Grant/Subcontract, Amount: **\$31,111**; Proposal title "Directed Energy Conversion in Mesoscale Assemblies of Nanomaterials"; Duration: 9/2014-12/2014; Role: PI.
- (20) Industrial grant from Alpha Micron Inc., Amount **\$34,512**; Proposal title "Electro-optic and renewable energy research on liquid crystals"; Duration: 9/2011-4/2017; Role: PI.
- (21) NREL Grant/Subcontract, Amount: **\$145,000**; Proposal title "Raman Spectroscopy of Hydrogenases and Hydrogenase-nanoparticle Complexes"; Duration: 7/2014-2/2017; Role: PI.
- (22) New Research Directions Grant from the ACS Petroleum Research Fund, Amount **\$100,000**; Proposal title "Structured Polymer Composites with Knotted Particles"; Duration: 1/2014-8/2016; Role: PI.
- (23) NREL Grant/Subcontract, Amount: **\$162,000**; Proposal title "Surface Enhanced Raman Spectroscopy of Metaloenzymes"; Duration: 7/2014-7/2015; Role: PI.
- (24) Over 40 different small grants, donation accounts, seed grants (e.g. CU Energy Initiative, RASEI and Innovation seed grants), and fellowships, with the total Amount of about **\$1,800,000**; Duration: within the last 12 years; Role: PI on almost all of them, co-PI on 5 of them.

PROFESSIONAL SERVICE

- Chair of the 2019 Gordon Research Conference on Liquid Crystals, University of New England, Biddeford, 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, Biddeford, 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.lcnet.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-present): http://spie.org/x1742.xml?chapter_id=1036246
- Faculty Advisor, Univ. of Colorado 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, Electrochemical and Solid State Letters (ESTL), Polymer, J. Nanoscience Lett., Nanoscale, Materials, Small, Royal Society Proceedings 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 two 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/pubs.html>)

Peer-reviewed articles & chapters	# of citations	I ₁₀ index	H index	<i>Nature & Science</i>	<i>PNAS, Nature journals</i>	<i>PRL, PRX & Nano Lett</i>
195	8250	151	52	7	24	23

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 *published while at CU-Boulder*

1. **Y. Yuan, Q. Liu, B. Senyuk and I.I. Smalyukh.*** “Elastic colloidal monopoles and out of equilibrium interactions in liquid crystals.” *Nature* **570**, 214–218 (2019).
2. D. Foster, C. Kind, **P. J. Ackerman, J.-S. Tai**, M. R. Dennis and **I. I. Smalyukh.*** Two-dimensional skyrmion bags in liquid crystals and ferromagnets. *Nature Physics* **15**, 655–659 (2019).
3. D.D. Hickstein, D.R. Carlson, **H. Mundoor**, J.B. Khurgin, K. Srinivasan, D. Westly, A. Kowligy, **I.I. Smalyukh**, S.A. Diddams, and S. B. Papp. Self-organized nonlinear gratings for ultrafast nanophotonics. *Nature Photonics* **13**, 494–499 (2019).
4. **B. Senyuk**, J. Aplinc, M. Ravnik and **I.I. Smalyukh.*** “High-order elastic multipoles as colloidal atoms.” *Nature Commun.* **10**, 1825 (2019).
5. **Q. Liu**, A. Kuzyk, M. Endo and **I. I. Smalyukh.*** Plasmonic colloidal origami with photo-switchable chirality in liquid crystals. *Opt. Lett.* **44**, 2831-2834 (2019).

6. D. Zhao, X. Zhao, J. Wang, H. Peng, Y. Liao, X. Xie, **I.I. Smalyukh** and Y. Yu. Visible Light Rewritable and Long-Lived Colors in Cholesteric Liquid Crystals: A Facile Co-Doping Strategy. *Macromolecular Rapid Commun.* 1900037 (2019).
7. Y. Zhou, **B. Senyuk**, R. Zhang, **I. I Smalyukh** and J.J. de Pablo. Degenerate conic anchoring and colloidal elastic dipole-hexadecapole transformations. *Nature Communications* **10**, 1000 (2019).
8. H. Peng, L. Yu, G. Chen, Z. Xue, Y. Liao, J. Zhu, X. Xie, **I.I. Smalyukh**, Y. Wei. Liquid Crystalline Nanocolloids for Storage of Electro-Optic Responsive Images. *ACS applied materials & interfaces* **11**, 8612–8624 (2019).
9. **S. Park, H. Mundoor, B. Fleury**, P. Davidson, J. van de Lagemaat and **I.I. Smalyukh**.* Electric switching of photon upconversion in colloidal nanorod dispersions. *Adv. Optical Mater.* 1900041 (2019).
10. X. Zhang, W. Yao, X. Zhou, W. Wu, **Q. Liu**, H. Peng, J. Zhu, **I.I. Smalyukh**, X. Xie. "Electro-Optic Responsive Holograms with Strong Upconversion Photoluminescence." *Composites Science and Technology* **181**, 107705 (2019).
11. **H. Mundoor, S. Park, B. Senyuk**, H. Wensink and **I. I. Smalyukh**.* "Hybrid molecular-colloidal liquid crystals." *Science* **360**, 768-771 (2018).
12. **I. I. Smalyukh**.* Liquid Crystal Colloids. (invited) *Annu. Rev. Condens. Matter Phys.* **9**, 207–226 (2018).
13. **J-S. Tai, P.J. Ackerman** and **I.I. Smalyukh**.* Topological transformations of Hopf solitons realized in chiral ferromagnets and liquid crystals. *Proc. Natl. Acad. Sci. U.S.A.* **115**, 921-926 (2018).
14. **Y. Yuan, A. Martinez, B. Senyuk**, M. Tasinkevych, and **I. I. Smalyukh**.* "Effects of chirality on elastic interactions and colloidal self-assembly in nematic liquid crystals." *Nature Mater.* **17**, 71–78 (2018). Highlighted in Nature Materials: K. Nayani, Y.-K. Kim & N. L. Abbott, *Nature Mater.* **17**, 14 – 15 (2018).
15. **J.-S. B. Tai** and **I. I. Smalyukh**.* "Static Hopf solitons and knotted emergent fields in solid-state chiral ferromagnetic nanostructures." *Phys Rev Lett* **121**, 187201 (2018).
16. **Y. Yuan, G. N. Abuhaimed, Q. Liu** and **I. I. Smalyukh**.* Light-driven spinning of colloidal micro-wheels. *Nature Communications.* **9**, 5040 (2018).
17. **Q. Liu, A. W. Frazier, X. Zhang, J. De La Cruz, R. Yang, A. Hess** and **I. I. Smalyukh**.* Transparent Cellulose-polysiloxane Hybrid Aerogel with and without Nematic Order. *Nano Energy* **48**, 266–274 (2018).
18. **J.-S. B. Tai** and **I. I. Smalyukh**.* "Super-resolution stimulated emission depletion microscopy of director structures in liquid crystals." *Optics Letters.* **43**, 5158-5161 (2018).
19. **H. Mundoor, G. H. Sheetah, S. Park, P. J. Ackerman, I. I. Smalyukh**,* and Jao van de Lagemaat.* "Plasmon-exciton interactions studied with quantum dots and plasmonic nanoparticles entrapped by defect lines." *ACS Nano* **12**, 2580–2590 (2018).
20. **Y. Xie, Y. Li, G. Wei, Q. Liu, H. Mundoor, Z. Chen** and **I. I. Smalyukh**.* "Liquid crystal self-assembly of upconversion nanorods enriched by depletion forces for mesostructured material preparation." *Nanoscale* **10**, 4218 - 4227 (2018).
21. X. Zhao, C. Huang, **Q. Liu, I.I. Smalyukh** and R. Yang. Thermal Conductivity Model for Nanofiber Networks. *J. Apl. Phys.* **123**, 085103 (2018).
22. **H. R. O. Sohn, P. J. Ackerman, T. J. Boyle, G. H. Sheetah, B. Fornberg, and I. I. Smalyukh**.* Active skyrmions and transport of cargo in liquid crystals. *Phys Rev E* **97**, 052701 (2018).

23. **J. De La Cruz, Q. Liu, A. W. Frazier, B. Senyuk and I. I. Smalyukh.*** Cellulose-based photonic structures as optical filters and solar gain regulating films. *ACS Photonics* **5**, 2468–2477 (2018).
24. **G. H. Sheetah, Q. Liu, B. Senyuk, B. Fleury and I. I. Smalyukh.*** Electric switching of visible and infrared transmission using liquid crystals co-doped with plasmonic gold nanorods and dichroic dyes. *Optics Express* **26**, 22264–22272 (2018).
25. H. Peng, **W. Jiang, Q. Liu**, G. Chen, M. Ni, F. Liang, Y. Liao, X. Xie and **I. I. Smalyukh.*** Liquid crystals under confinement in submicrometer capsules. *Langmuir* **34**, 10955–10963 (2018).
26. P. Rofouie, M. Alizadehgiashi, **H. Mundoor, I. I. Smalyukh** and E. Kumacheva. Semi-Spherical Cholesteric Films Formed by Cellulose Nanocrystals. *Advanced Functional Materials* **28**, 1803852 (2018). doi.org/10.1002/adfm.201803852
27. H. Ruan, G. Chen, X. Zhao, Y. Wang, Y. Liao, H. Peng, C.-L. Feng, X. Xie, **I.I. Smalyukh**. Chirality Enabled Liquid Crystalline Physical Gels with High Modulus but Low Driving Voltage. *ACS Applied Materials & Interfaces* **10**, 43184–43191 (2018).
28. S. Mi, Y. Xie, Y. Li, R. Liu, X. Liu, **I. I. Smalyukh** and Z. Chen. The Effect of Thickness-Tunable ZrO₂ Shell on Enhancing the Tunneling Magnetoresistance of Fe₃O₄ Supraparticles. *Adv. Mater. Interfaces* **5**, 1800236 (2018).
29. D. Zhang, **Q. Liu**, R. Visvanathan, M. R. Tuchband, **G. H. Sheetah**, B.D. Fairbanks, N.A. Clark, **I.I. Smalyukh** and C.N. Bowman. Supramolecular hydrogel prepared from thymine-containing artificial nucleolipid: study of assembly and lyotropic mesophases. *Soft Matter* **14**, 7045-7051 (2018).
30. **P. J. Ackerman, T. Boyle and I. I. Smalyukh.*** “Squirring motion of baby skyrmions.” *Nature Comm.* **8**, 673 (2017).
31. **Q. Liu and I. I. Smalyukh.*** “Cellulose-based Nematogels.” *Science Advances* **3**, e1700981 (2017).
32. Y. Liang, **Y. Xie**, D. Chen, S. Hou, T. Wen, K. Deng, X. Wu, **I. I. Smalyukh*** and Q. Liu. Counterintuitive nanorod assembly driven by strong directional forces and its unusual thermostability. *Nature Comm.* **8**, 1410 (2017).
33. **P. J. Ackerman and I. I. Smalyukh.*** “Diversity of knot solitons in liquid crystals manifested by linking of preimages in torons and hopfions.” *Phys Rev X* **7**, 011006 (2017). Highlighted in Phys.org Nature Physics and Nature Photonics.
34. **B. Senyuk, Q. Liu, P. D. Nystrom**, and **I. I. Smalyukh.** ”Repulsion-attraction switching in colloidal dispersions formed by polygonal prisms.” *Soft Matter* **13**, 7398-7405 (2017).
35. **P. J. Ackerman and I. I. Smalyukh.*** “Static 3D knotted solitons in fluid chiral ferromagnets and colloids.” *Nature Mater* **16**, 426-432 (2017). Highlighted in Nature Physics & Nature Materials. Featured on the Nature Materials Cover Page.
36. **H. Mundoor, B. Senyuk, and I. I. Smalyukh.*** “Triclinic colloidal crystals from competing elastic and electrostatic interactions.” *Science* **352**, 69-73 (2016).
37. **B. Senyuk, O. Puls**, O. Tovkach, S. Chernyshuk, and **I. I. Smalyukh.*** “Hexadecapolar nematic colloids.” *Nature Communications* **7**, 10659 (2016).
38. **Q. Liu, P.J. Ackerman**, T. C. Lubensky and **I. I. Smalyukh.*** “Biaxial ferromagnetic liquid crystal colloids.” *Proc. Natl. Acad. Sci. U.S.A.* **113**, 10479–10484 (2016).
39. **S. Park, Q. Liu, and I. I. Smalyukh.*** “Colloidal surfaces with boundary, apex boojums and nested self-assembly in pyramidal-cone nematic colloids.” *Phys. Rev. Lett.* **117**, 277801 (2016). Highlighted in *Physics*.

40. **R.P. Trivedi**, M. Tasinkevych and **I. I. Smalyukh**.* “Nonsingular defects and self-assembly of colloidal particles in cholesteric liquid crystals.” *Phys Rev E*. 94, 062703 (2016).
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- 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, CHEMPHYSICHEM 2, 663-664 (2001)

RESEARCH INTERESTS AND EXPERTISE

· nano-structured materials and their applications; · active and topological colloids; · molecular & colloidal self-organization for renewable energy applications; · study of soft condensed matter & biomolecular materials by optical techniques; · novel approaches for light harvesting; · structure, electro-optics, & applications of liquid crystals; · laser trapping & manipulation; · structure & dynamics of colloidal suspensions · confocal, near-field, multi-photon fluorescence, & CARS microscopy; · organic photovoltaics; · columnar liquid crystalline semiconductors; · topological defects; · nanophotonics & plasmonics; · liquid crystal phases of DNA and F-actin

LECTURING

Courses Taught at CU

Semester	Course #	Course Description	FCQ(out of 6)*.**
16 Fall	PHYS-7450	SOLID STATE THEORY II	5.1
16 Spr	PHYS-4340	INTRO SOLID STATE PHYSICS	5.0
15 Fall	PHYS-7430	SOFT COND MATTER PHYSICS	5.2
14 Spr	PHYS-2170	FOUNDATIONS MOD PHYSICS	3.2
13 Spr	PHYS-7430	SOFT COND MATTER PHYSICS	4.7
12 Fall	PHYS-2170	FOUNDATIONS MOD PHYSICS	4.0
12 Sum	PHYS-4810	SPECIAL TOPICS IN PHYSIC	6.0
12 Spr	PHYS-7810	SPECIAL TOPICS IN PHYSIC	5.8
11 Fall	PHYS-1230	LIGHT/COLOR NONSCIENTIST	4.9
11 Spr	PHYS-4230	THERMODYNAM STAT MECH	3.9
10 Fall	PHYS-4810	SPECIAL TOPICS IN PHYSIC	5.3

10 Spr	PHYS-7430	SOFT CONDNSD MAT PHYS	5.3
09 Fall	PHYS-1230	LIGHT/COLOR NONSCIENTIST	3.7
09 Spr	PHYS-7810	TPC-SOFT CONDENS MATTER	4.5
08 Fall	PHYS-1230	LIGHT/COLOR NONSCIENTIST	4.0
07 Fall	PHYS-1140-110	LAB	4.0

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 “New trends in the variational modeling and simulation of liquid crystals”, Boltzmannngasse 9, 1090 Vienna, Austria, December 2-6, 2019, <http://www.asc.tuwien.ac.at/esi-liquidcrystals2019/>
- 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/iberofex/>
- 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://fnm.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

- 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
- Statistical 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

- Physics 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 Collins, 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 fluorescence, 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 University of New York at Buffalo, March 12, 2004.

GROUP MEMBERS: PhD STUDENTS, POSTDOCS & VISITING SCIENTISTS

(146 total)

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: (24 total, 7 graduated with PhD and 8 graduated with MS):

Rahul Trivedi (PhD in ECEE received in 2012; 15 papers and one book chapter published based on the work in the group; currently a research group leader at Intel Corp.);

Julian Evans (PhD in Physics received in Summer 2013; 12 papers published while in the group; currently an Associate 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; 4 papers published based on the research in the group; currently at Washington U).

Mike Varney (Defended PhD in Physics in 2014; published 8 articles while in the group; currently co-founder and Chief Scientist at Exnodes Inc);

Angel Martinez (defended PhD in Physics in the Fall 2014, was a postdoc in the group between January –April 2015, published 10 articles while in our research group with one more under review), currently a postdoc at UPenn); Received 2016 Glenn Brown Best Dissertation Award of the International Liquid Crystal Society (ILCS).

Qiaoxuan Zhang (defended MS thesis, materials Science and Engineering graduate program; Qiaoxuan was also a physics undergraduate student in our research group; he published 4 articles based on his research in the group and graduated with MS in materials science and engineering in spring 2015);

Paul Ackerman (Defended PhD in ECEE, Spring 2016, currently continuing in our group as a postdoctoral fellow). Paul also did his honors thesis in the group, which he defended in Spring 2012; Paul published 19 articles during his overall undergraduate-graduate-postdoctoral career in our research group, with two more articles currently under preparation.

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 published 5 articles and has two more under preparation);

Ye Yuan (defended PhD in November 2018, published 9 articles while in the group so far and has two more under preparation);

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, published two articles based on his graduate and undergraduate research in the 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, published one article based on the project in our group, 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, published one article).

Andrew Hess (6th year Post-Comps III physics PhD student, joined the research group in April 2014, published 3 papers).

Sungoh Park (5th year physics PhD student, joined the research group in April 2015, published 5 papers).

Allister Frazier (MSE PhD student, joined the group in the Fall 2016, published 1 paper).

Hayley Osman Sohn (4th year MSE PhD student supported by the Chancellor Fellowship and the NSF Graduate Research Fellowship, joined the research group in the Fall 2015, published 3 papers).

Benny Jung-Shen Tai (4th year physics PhD student with completed Comps II, joined group in the Fall 2016, published 4 papers).

Joshua De La Cruz (5th year MSE PhD student, joined group in the Fall 2015, published 2 papers).

Rao Fei (MSE PhD student, joined the group in the Spring 2019).

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

CU POSTDOCS (20 total, 10 current, searching to hire 2 more):

Taewoo Lee (since 2008, 17 papers and two textbook chapters published while in the research group);

Bohdan Senyuk (since 2010, 27 papers published while in the group);

Haridas Mandoor (since 2012, 9 paper published while in the group);

Qingkun Liu (in the group since 2009 till 11/2018, 24 papers published while in the group, currently Sr. Research Associate at Cornell University);

Li Jiang (in the research group 9/2015-11/2018, with a leave break, one paper published);

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

Clayton Lapointe (August 2008-September 2011, also spending close to one year at UCLA working jointly with me and my collaborator T. Mason under my co-supervision; 4 papers published while in the group; 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; 4 papers published based on research while in the group).

Dong-ki Yoon (2009-2011, started as a visiting scientist for 2 months, was co-advised and co-sponsored jointly with Noel Clark; 5 papers published while in the group; currently an Associate Professor at KAIST, South Korea).

Paul J. Ackerman (2016-present, also past PhD student and undergraduate Physics Honors student in our research group, Paul published 19 articles during his overall undergraduate-graduate-postdoctoral career in our research group, with two more articles currently under preparation);

Blaise Fleury (2016-present, working on the ARPA-E and DOE BES projects, 3 papers published, 2 under preparation)

Yong Xie (in the group within 8/2015-9/2016, supported by a fellowship of Chinese National Science Foundation, 3 papers published, 2 under preparation, currently an Asst. Prof. at BUAA, China);

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

Eldho Abraham (2017-present, working on the new ARPA-e project, one paper published, 2 under preparation).

Vladyslav Cherpak (2018-present, working on the new ARPA-e project, 2 papers under preparation).

Ze Zhang Chen (2018-present, working on liquid crystal waveguiding and cholesteric cellulose nanocrystal based reflectors).

Ye Yuan (2019-present, working on the DOE project, 9 papers from PhD work, 2 new under preparation).

Jan Bart ten Hove (2019-present).

Adam Ollanik (2019-present).

Andrii Repula (2019-present).

CU UNDERGRADUATE STUDENTS (75 total):

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)

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 Government)

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 & now is a CU Physics PhD student, published 2 papers as an undergraduate – papers #36 and 38 in my CV)

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 (22 TOTAL):

• Visiting Faculty (7 total): **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 (18 total): **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.,

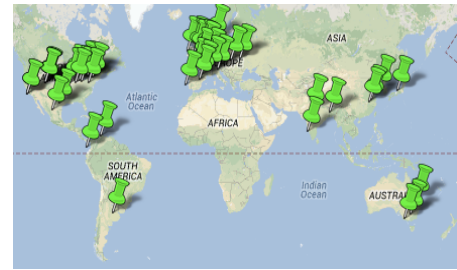
China), **B. Dan** (Rice Univ.), **Y. Izdebskaya** (Nonlinear Physics Centre of Australian National University, Canberra, Australia), **V. Panov** (Trinity College, University of Dublin, Ireland), **J. Alonso López Medina** (Universidad del Valle, Cali, Colombia), **Philipp Wilhelm** (University of Regensburg, Germany), **Yuan Zhang** (Zhejiang University, China).

UNDERGRADUATE HONORS DIPLOMA STUDENTS (14 total):

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 Kamiem, Arjun Yodh, Tom Lubensky** (UPenn); • **Tim White, A. Urbas** (AFRL, Dayton, Ohio); • **Tom Mason** (UCLA); • **Hector Mireles** (CSU-Pomona); • **Paras Prasad** (SUNY -Buffalo); • **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 Inc.); • **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 Pergamenschik, 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. Montpellier, 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); • **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).

LANGUAGES

English, Ukrainian (Native), Polish, and Russian

MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

2000-present American Physical Society (APS), GSoft topical group, and APS 4-Corners Regional Section
 2001-present International Liquid Crystal Society (ILCS) (lifetime member)
 2002-present The International Society for Optical Engineering (SPIE)
 2002-present Optical Society of America (OSA)
 2004-present American Association for the Advancement of Science
 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)

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>