

# Greta Babakhanova

## Curriculum Vitae

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<b>Education</b>	<b>Ph.D. Candidate, Chemical Physics Interdisciplinary Program</b> exp. 05/2020 Liquid Crystal Institute Kent State University, Kent, OH
	<b>Master of Science, Chemical Physics</b> 05/2016 Liquid Crystal Institute Kent State University, Kent, OH
	<b>Bachelor of Science, Physics</b> 05/2014 Minors: Mathematics, German San Jose State University, San Jose, CA
<b>Research</b>	<b>Liquid Crystal Institute</b> 08/2014 - Present “Characterization of liquid crystals forming twist-bend nematic phase” <i>Advisor: Dr. Oleg D. Lavrentovich</i>
	<b>Eindhoven University of Technology</b> 01/2017 - 03/2017 “Combining liquid crystal dimers and reactive mesogens” <i>Advisor: Dr. Dirck Broer</i>
	<b>Otto-von-Guericke-Universität Magdeburg</b> 06/2015 - 07/2015 “Optical Studies of M37 Liquid Crystal Material” <i>Advisor: Dr. Alexey Eremin, Dr. Ralf Stannarius</i>
	<b>NASA’s Jet Propulsion Laboratory/Caltech</b> 06/2013 - 08/2013 “Search for Hazardous Near Earth Objects” <i>Advisor: Dr. Amy Mainzer</i>
	<b>SETI Institute</b> 08/2012 - 05/2013 “Using stereo photogrammetry to create digital elevation models of planetary surfaces” <i>Advisor: Dr. Cynthia Phillips</i>
	<b>San Jose State University</b> 05/2011 - 01/2013 “Design and construction of an electro-optic modulator” <i>Advisor: Dr. Peter Beyersdorf</i>
	<b>San Jose State University</b> 09/2010 - 05/2011 “Frustration in condensed matter” <i>Advisor: Dr. Carel Boekema</i>
<b>Publications</b>	1. <b>G. Babakhanova</b> , Z. Parsouzi, S. Paladugu, H. Wang, Yu. A. Nastishin, S. V. Shiyakovskii, S. Sprunt, O. D. Lavrentovich. “Elastic and viscous properties of the nematic dimer CB7CB, <i>Accepted in PRE</i> (2016).
	2. <b>G. Cukrov</b> , Y.M. Golestani, J. Xiang, Yu. A. Nastishin, Z. Ahmed, C. Welch, G. H. Mehl and O. D. Lavrentovich. “Comparative analysis of anisotropic material properties of uniaxial nematics formed by flexible dimers and rod-like monomers, <i>Liquid Crystals</i> , 1-13 (2016). DOI:10.1080/02678292.2016.1240248
	3. Y. K. Kim, <b>G. Cukrov</b> , Francesco Vita, Eric Scharrer, Edward T. Samulski, Oriano Francescangeli, and O. D. Lavrentovich. “Search for microscopic and macroscopic biaxiality in the cybotactic nematic phase of new oxadiazole bent-core mesogens, <i>Phys. Rev. E</i> , 93, 062701 (2016). DOI:10.1103/PhysRevE.93.062701
	4. N. Sebastin, M. G. Tamba, R. Stannarius, M. R. de la Fuente, M. Salamonczyk, <b>G. Cukrov</b> , J. Gleeson, S. Sprunt, A. Jkli, C. Welch, Z. Ahmed, G. H. Mehl and A. Eremin. “Mesophase structure and behaviour in bulk and restricted geometry of a dimeric compound exhibiting a nematic-nematic transition, <i>Phys. Chem. Chem. Phys.</i> , 18, 19299-

19308 (2016). DOI:10.1039/C6CP03899A

5. Y. K. Kim, **G. Cukrov**, J. Xiang, S. T. Shin and O. D. Lavrentovich. "Domain walls and anchoring transitions mimicking nematic biaxiality in the oxadiazole bent-core liquid crystal C7, *Soft Matter*, 11, 3963-3970 (2015). DOI:10.1088/0004-637X/784/2/110

6. A. Mainzer, J. Bauer, T. Grav, J. Masiero, R. M. Cutri, E. Wright, C. R. Nugent, R. Stevenson, E. Clyne, **G. Cukrov**, and F. Masci. "The Population of Tiny Near-Earth Objects Observed by NEOWISE, *The Astrophysical Journal*, 784, 2 (2014). DOI: 10.1039/C5SM00580A

7. **G. Cukrov**. "Using Stereo Photogrammetry to Create Digital Elevation Models of Planetary Surfaces, *Proceedings of The National Conference On Undergraduate Research (NCUR)*, (2013).

## Skills

Microscopy: transmission electron microscopy, atomic force microscopy, scanning electron microscopy, polarized optical microscopy, digital holographic microscopy

Optical Lab Skills: optical interferometry, optical bench setup, alignment, and electro-optical testing, holography

Clean-room experience (Class 1000): photolithography, photoimaging, chemical processing, surface treatment, assembly

Programming: MATLAB, Python, Mathematica, LabView, ISIS, HTML, LaTeX

Electronics skills: circuit assembly, soldering

Experienced in data and image processing

Proficient with MS Office, Adobe Photoshop, Illustrator, Mathcad, and SOCET SET

Experience with Microsoft, UNIX, LINUX operating systems

Experience with OS X and iOS on Apple products

## Awards

Graduate Student Senate Domestic Travel Award, Kent State University 08/2017

Artist of the month, The International Liquid Crystal Society 07/2017

Artist of the month, The International Liquid Crystal Society 04/2017

Best Student Talk Award, 60th Annual SAS/ACS/AVS/MSNO May Conference 05/2016

Best Presentation Award (1st place), SPIE, OSA, SID Student Research Talk 12/2015

Honorable Mention, 3rd Annual SAACS Honor's Week Poster Session 04/2015

Richard and Angela Craig Scholarship 09/2013

Scholars in Science Scholarship 08/2011-05/2013

Science Giving Circle for Physics Scholarship 07/2012

## Grants

Undergraduate Research Grant 06/2012

## Research Talks

**John Carroll University** 05/2016

*"Elastic Properties of Dimeric Liquid Crystals with Negative Dielectric Anisotropy"*

60th Annual SAS/ACS/AVS/MSNO May Conference

**Liquid Crystal Institute** 12/2015

*"Elastic Constants of Nematic Mixtures Formed by Mesogenic Dimers and Monomers"*

SPIE, OSA, SID Student Chapter Research Talks

**California State Polytechnic University, Pomona** 09/2013

*"Search for Hazardous Near Earth Objects"*

CA-AZ Minority Partnership for Astronomy Research and Education Symposium

**San Jose State University** 09/2013

*"Search for Hazardous Near Earth Objects"*

Physics and Astronomy Department Seminar

**Jet Propulsion Laboratory** 08/2013

*"Search for Hazardous Near Earth Objects"*

**SETI Institute** 06/2013

*"Using Stereo Photogrammetry to Create Digital Elevation Models of Planetary Surfaces"*

Public Talk at the SETI Institute Headquarters

**San Jose State University** 05/2013

*"Using Stereo Photogrammetry to Create Digital Elevation Models of Planetary Surfaces"*

- University of Wisconsin - La Crosse** 04/2013  
*"Using Stereo Photogrammetry to Create Digital Elevation Models of Planetary Surfaces"*  
27th National Conference on Undergraduate Research
- San Jose State University** 05/2012  
*"Design and construction of an electro-optic modulator"*  
Physics and Astronomy Department Seminar
- Poster Presentations** **University of New England** 08/2016  
*"Dynamic surface topography of liquid crystalline polymeric coatings with predesigned topological defects"*  
Gordon Research Conference: Poster Session
- Liquid Crystal Institute** 08/2016  
*"Spontaneous twist and bend deformations in nematic phases with non-uniform ground state"*  
26th International Liquid Crystal Conference: Poster Session
- Liquid Crystal Institute** 08/2016  
*"Comparative analysis of anisotropic material properties of uniaxial nematics formed by flexible dimers and rod-like monomers"*  
26th International Liquid Crystal Conference: Poster Session
- Forschungszentrum Jülich GmbH** 09/2015  
*"Temperature Dependence of Topological Defect in the Twist-Bend Nematic Liquid Crystal Droplets Dispersed in Isotropic Fluid"*  
"Microswimmers Summer School 2015: Poster Session
- Kent State University** 04/2015  
*"Temperature Dependence of Topological Defect in the Twist-Bend Nematic Liquid Crystal Droplets Dispersed in Isotropic Fluid"*  
3rd Annual SAACS Honors Week Poster Session
- Kent State University** 03/2015  
*"Temperature Dependence of Topological Defect in the Twist-Bend Nematic Liquid Crystal Droplets Dispersed in Isotropic Fluid"*  
2015 Annual Spring Meeting of the APS Ohio-Region Section
- Gaylord National Resort and Convention Center** 01/2014  
*"Pilot Study of Enhanced Minor Planet Detection Using NEOWISE Data"*  
223rd Annual American Astronomical Society (AAS) Meeting
- San Jose State University** 05/2013  
*"Using Stereo Photogrammetry to Create Digital Elevation Models of Planetary Surfaces"*  
9th Annual College of Science Student Research Day
- San Jose State University** 05/2012  
*"Design and construction of an electro-optic modulator"*  
8th Annual College of Science Student Research Day
- Stanford University** 01/2012  
*"Design and construction of an electro-optic modulator"*  
Conference for Undergraduate Women in Physics (CUWiP)
- University of Southern California** 01/2011  
*"Frustration in condensed matter"*  
6th Annual Conference for Undergraduate Women in Physics

<b>Teaching Experience</b>	Instructional Assistant, <i>Kent State University, Physics Department</i>	08/2014 - 05/2016
	Instructional Assistant, <i>San Jose State University, Physics Department</i>	Spring 2014
	Physics Tutor, <i>San Jose State University</i>	Fall 2013
	College Physics Workshop (2AW) Instructor, <i>San Jose State University</i>	Fall 2011
<b>Other Employment</b>	Student Assistant, <i>San Jose State University, Physics Department</i>	09/2010-08/2014
	Grader (mechanics and optics classes), <i>San Jose State University</i>	08/2011-12/2013
	Sales Associate, <i>Coldwater Creek Inc.</i>	09/2009 - 09/2010
	Owner/Designer, <i>AMGS Design and Printing</i>	03/2008 - 01/2012
<b>Languages</b>	Russian - native language	
	English and Armenian - fluent	
	Spanish and German - speak, read, and write with basic competence	
<b>Memberships</b>	American Physical Society (APS)	2010 - Present
	The Optical Society (OSA)	2014 - Present
	The International Society for Optics and Photonics (SPIE)	2014 - Present
	The Society for Information Display (SID)	2014 - Present
	International Liquid Crystal Society (ILCS)	2014 - Present
<b>Community Activities</b>	Gordon Research Seminar on Liquid Crystals, Chair	2017-2019
	Graduate Student Senate senator	2016 - 2017
	G.A. Task Force, Kent State University	2016 - Present
	Judicial Advocate, Kent State University	2016
	Treasurer of the OSA student chapter at Kent State University	2015 - 2016
	President of the OSA student chapter at Kent State University	2014 - 2015
	Vice-president of the SPIE student chapter at Kent State University	2014 - 2015
	Secretary of the SID student chapter at Kent State University	2014 - 2015
	Volunteered to organize the JPL Summer Intern CubeSat Symposium	07/2013
	Student Member-at-Large in American Physical Society CA/NV Section	2012 - 2013
President of the Women in Science and Engineering Club at SJSU	2010 - 2011	