Kerstin N. Nordstrom

Department of Physics
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Interests

Soft matter, granular materials, complex fluids, rheology, biophysics, robophysics, MEMS, networks

Professional Appointments

Clare Boothe Luce Assistant Professor, 2014-present
−Department of Physics, Mount Holyoke College

Postdoctoral Researcher 2011-2014
−IREAP, University of Maryland
−Impact dynamics in a granular bed, collective dynamics of epithelial and embryonic cells
−Advisor: Wolfgang Losert

Education

University of Pennsylvania, Philadelphia, Pennsylvania

- Ph.D. Physics, December 2010 (M.S., Physics, 2006)

−Thesis Title: "Jamming and Flow of Soft Particle Suspensions"
−Advisors: Doug Durian and Jerry Gollub

Bryn Mawr College, Bryn Mawr, PA

- B.A., Physics and Mathematics, with honors, 2004

−Thesis Title: "A Solid State NMR Relaxation Study of 1,3-dimethoxy-4-tert-butylcalix[4]arene"
−Advisor: Peter Beckmann

Grants

Current
−2018: Cottrell Scholar Award ($100,000) - "Flow in Amorphous Systems: Understanding Dynamics Across Scales" - (PI)
−2018: MHC-Fund The Future ($149,837) "Active Soft Matter: Connecting Microscale Motion to Macroscale Behavior" (PI)
−2016: ACS-PRF ($55,000) "Dense Granular Flows: Connecting Dynamics Across Scales" (PI)

Pending / In Preparation
− 2017: NSF-MRI ($516,249)- Acquisition of a Confocal Microscope at Mount Holyoke (Co-PI)
− 2018: NSF CAREER ($450,000) - (PI)

Awards and Fellowships

Love Your Lyons Award, "Best New Faculty," 2015
−Mount Holyoke College

AAAS Mass Media Fellow, 2012
−Placement site: *Raleigh News and Observer*.

Teaching Fellow, Center for Teaching and Learning, 2005
−School of Arts and Sciences, University of Pennsylvania

Chairman's Teaching Award, 2005
−Department of Physics and Astronomy, University of Pennsylvania

Reviewed Publications

*Denotes undergraduate author

18. S. Arrington*, D. Powers*, W. Losert, and K. N. Nordstrom, "Impact into Saturated Granular Material," under review at *Physical Review E*.

17. K. N. Nordstrom, J. C. Conrad, K. E. Daniels, and J. L. Ross,"For SHE's a Jolly Good Fellow?" *APS News*, 27(4), (2018)

16. E. Thackray* and K. N. Nordstrom, "Gravity-driven granular flow in a silo: Characterizing local forces and rearrangements" *EPJ Web of Conferences* 140, 03087 (2017)

15. E. D. Cubuk, R. J. S. Ivancic, S. S. Schoenholz, D. J. Strickland, A. Basu, Z. S. Davidson, J. Fontaine, J. L. Hor, Y. R. Huang, Y. Jiang, N. Keim, K. D. Koshigan, J. Lefever, T. Liu, X.G. Ma, D. J. Magagnosc, Emily Morrow, C. P. Ortiz, J. M. Rieser, A. Shavit, T. Still, Y. Xu, Y. Zhang, K. N. Nordstrom, P. E. Arratia, R. W. Carpick, D. J. Durian, Z. Fakhraai, D. J. Jerolmack, Daeyeon Lee, Ju Li, R. Riggleman, K. T. Turner, A. G. Yodh, D. S. Gianola, A. J. Liu,"Structure-property relationships from universal signatures of plasticity in disordered solids," *Science* 358, 1033 (2017)

14. K. N. Nordstrom, D. S. Dorsch, W. Losert, A. G. Winter, V, "A Microstructural View of Burrowing with Roboclam," *Physical Review E* **92** 044202 (2015).

13. (Invited Book Chapter) K.N. Nordstrom and W. Losert, "Microstructure Evolution During Impact using Refractive Index Matched Granular Matter," part of *Rapid Penetration into Granular Media*, Elsevier (2015), M. Iskander editor.

12. A. Basu, Y. Xu, T. Still, P. E. Arratia, Z. Zhang, K. N. Nordstrom, J. P. Gollub, D. J. Durian, and A. G. Yodh, "Rheology of Soft Colloids Near Rigidity Onset: Critical Scaling, Thermal, and Non-thermal Responses, *Soft Matter* **10**, 2017 (2014).

11. M. Harrington, M. Lin*, K. N. Nordstrom, and W. Losert, "Experimental Measurements of Orientation and Rotation of Dense 3D Packings of Spheres," *Granular Matter* **16**, 185 (2014).

10. K. N. Nordstrom, E. Lim*, M. Harrington, and W. Losert, "Granular Dynamics During Impact," *Physical Review Letters* **112**, 228002 (2014).

9. R.M. Lee, D.H. Kelley, K.N. Nordstrom, N.T. Ouellette, and W. Losert, "Quantifying stretching and rearrangement in epithelial sheet migration," *New Journal of Physics* **15** 025036 (2013).

8. N. Murdoch, B. Rozitis, K. Nordstrom, S.F. Green, P. Michel, T-L. de Lophem, and W. Losert, "Granular Convection in Microgravity," *Physical Review Letters* **110**, 018307 (2013).

7. N. Murdoch, P. Michel, D.C. Richardson, K. Nordstrom, C.R. Berardi*, S.F. Green, and W. Losert, "Numerical simulations of granular dynamics II. Particle dynamics in a shaken granular material," *Icarus*, **219**, 321 (2012).

6. K.N. Nordstrom, J.P. Gollub, and D.J Durian, "Dynamical Heterogeneities in Sheared Suspensions," *Physicl Review E,* **84**, 021403 (2011).

5. C.D. Jones, K. N. Nordstrom, and D.J. Durian, "Rheology of Nearly Ideal 3D Foams."

4. K.N. Nordstrom, E. Verneuil, W.G. Ellenbroek, T.C. Lubensky, J.P. Gollub, and D.J. Durian, "Centrifugal compression of soft particle packings: theory and experiment," *Physical Review E*, **82**, 041403 (2010).

3. K.N. Nordstrom, E. Verneuil, P.E. Arratia, A. Basu, Z. Zhang, A.G. Yodh, J.P. Gollub, and D.J. Durian, "Microfluidic Rheology of Soft Colloids Above and Below Jamming," *Physical Review Letters*, **105**, 175701 (2010).

2. F.J. Byfield, Q. Wen, I. Levental, K. Nordstrom, P.E. Arratia, R.T. Miller, and P.A. Jamney, "Absence of Filamin A Prevents Cells from Responding to Stiffness Gradients on Gels Coated with Collagen but not Fibronectin," *Biophysical Journal*, **96**, 5095 (2009).

1. P.A. Beckmann, J. Rosenberg*, K. Nordstrom*, C.W. Mallory, and F.B. Mallory, "CF3 rotation in 3-(trifluoromethyl)phenanthrene: Solid state F-19 and H-1 NMR relaxation and Bloch-Wangsness-Redfield theory," *Journal of Physical Chemistry A*, **110**, 3947 (2006).

Invited Talks

Physics Colloquium
−November 29 2017, University of Rochester

Physics Colloquium
−February 7, November 8 2017, Clark University

Physics Colloquium
−February 7, Worcester Polytechnic Institute

Physics Colloquium
−December 1, 2016, Wesleyan University

Physics Colloquium
−March 25, 2016, Smith College

Condensed Matter Seminar
−February 23, 2016, University of Massachusetts

Physics Colloquium
−February 16, 2016, Amherst College

Condensed Matter and Biophysics Seminar
−September 24, 2013, NC State University

Applied Dynamics Seminar
−November 8, 2012, University of Maryland

NSF-MRSEC seminar
−January 21, 2011, University of Pennsylvania

Princeton Soft Matter Meeting
−December 16, 2010, Princeton University

NYU Soft Matter Meeting
−May 1, 2009, New York University

NSF-MRSEC seminar
−June 29, 2007, University of Pennsylvania

Teaching at Mount Holyoke

PHYS 100: Foundations of Physics

−F16 [$n = 1$]

−Algebra-based course intended for pre-health students. (Mechanics, fluids, thermodynamics)

−Developed new laboratories with T. Herd.

−Used many ideas and methods developed in NEXUS project at UMD.

PHYS 150: Phenomena of Physics

−S17 [$n = 1$]

−Second semester of the pre-health sequence. (Electricity, magnetism, light, nuclear physics)

−Developed new laboratories with T. Herd.

−Used many ideas and methods developed in NEXUS project at UMD.

PHYS 110: Force, Motion and Energy

−F14, S15, F15, S16 [$n = 4$]

−Calculus-based mechanics course required for majors.

−In addition to lecturing, developed and co-taught (F14, S15) laboratories with T. Herd.

PHYS 201: Electromagnetism

−S15 [$n = 1$]

−Developed and taught laboratories only (A. Arango lecture instructor).

PHYS 315: Analytical Mechanics

−S16, S17 [$n = 2$]

−Upper-level classical physics course, required for those considering graduate school, and highly recommended for those with interests in fluids or mechanical engineering.

−Developed computational physics modules to complement analytical problem sets.

PHYS 326: Statistical Mechanics

−F15, F16 [$n = 2$]

−Upper-level course, required for those considering graduate school and highly recommended for those with interests in materials science or micro-biological systems.

−Developed computational physics modules to complement analytical problem sets.

COLL 115: The Future of Jobs: The Dual Challenges of Globalization and Robotization

−S16. Two-credit general education course. Co-taught with 7 other instructors.

−In addition to lecturing and facilitating discussion about robotics during the lecture, I developed a laboratory to teach students the principles of actuation and grip in various kinds of robot arms (i.e. electro-mechanical, pneumatic). My colleagues in computer science developed complementary labs about sensing/sensors (L. Ballasteros) and programming robots (A. St. John).

Supervisor: PLUMs and Graders

−Every semester, I employ a group of 3-4 students that facilitates the Peer Led Undergraduate Mentoring ("PLUMs") sessions for my introductory class. We hold weekly meetings for planning and assessment (both of the introductory students and their teaching methods).

−I also generally employ a homework grader for my intro classes. (These are for weekly short "formative" assignments – I grade everything else.) This requires regular meetings and communication to ensure they are doing good work and learning from the experience.

Undergraduate Research at Mount Holyoke

Independent Study Students

−Pa Chia Thao (F15, S16, F16) "Investigation of Granular Avalanches in Reduced Gravity"

−Kiera McCabe (F17, S18) "Video analysis of Impact into granular fluids"

−Phoebe Seltzer (F16) "Culturing and Observing Flagellated Swimmers"

−Haley Lucian (F16, S17) "Active Colloids: The Collective Dynamics of C. reinhardtii"

−Lilliana Beckmann (S16, F17, S18) "Microfluidic Investigation of Shear-Thinning Fluids"
−Keelin Quirk (S18) "Microfluidic flows of soft particles"
−Grace Cai (F17, S18) "Molecular dynamics simulation of granular flows in a quasi-two-dimensional silo" (HONORS THESIS)
−Emma Thackray (F16, S17, F17, S18) "Linking flow intermittencies to material structure in a quasi-two-dimensional granular silo" (HONORS THESIS)
−Tamia Williams (F17, S18) "The Intersection of Identity and Performing Arts of Black Physicists" (HONORS THESIS)

Summer Research Students (Funding Source)
−2018: Grace Cai (PRF), Anna Belle Harada (PRF)
−2017: Grace Cai (PRF), Ariel Kane-Esrig (PRF), Kiera McCabe (CBL), AB Harada (CBL)
−2016: Emma Thackray (CBL), Lilliana Beckmann (CBL), Isabelle Kim (LYNK)
−2015: Emma Thackray (CBL), Lilliana Beckmann (CBL)

Institutional Service

Phi Beta Kappa Prize Committee, Spring 2018

Faculty Planning and Budget Committee, Spring 2016
−Semester leave replacement

Student Experience Working Group, Fall 2015
−Part of Strategic Planning Process
−Subcommittee on Retention

Goldwater Selection Committee, Fall 2015 and Fall 2016

Departmental Service

Academic Advising
−2016-17: 19 total (16 majors)
−2015-16: 12 total (10 majors)

Society of Physics Students Advisor, 2014-present

Physics Search Committee, Fall 2015

Physics Visitor Search Committee, Spring 2016

Physics Visitor Search Committee, Spring 2017

Professional Service

Referee
−*PLoS One, Physical Review Letters, Physical Review E, Granular Matter, Physica D*
− (grant review) NASA, Army Research Office, ACS Petroleum Research Fund

APS Committee on the Status of Women in Physics (CSWP)
−Selected as a member in 2013, three year term 2014-2017.
−Maria Goeppert Mayer Award Selection Committee, Vice Chair (2014); Chair (2015)
−March Meeting CSWP Invited Session, Panelist (2016), Session Chair (2017)
−Subcommittee on sexual harrassment, 2016-present
−In 2018, published new "Effective Practices for Recruiting and Retaining Women in Physics" on APS site.
−Trained to run Communication and Negotiation Skills Workshops in 2017.
- March 7 2018, APS March Meeting, Los Angeles, CA
- January 13 2018, Conference for Undergraduate Women in Physics, RIT
- November 28 2017, University of Rochester

Prior Teaching and Mentorship

Undergraduate Mentoring, Summer 2014

-Supervised Shola Wylie (coincidentally MHC '15) on a granular impact project as part of the TREND REU program at the University of Maryland.

NEXUS Project: Introductory Physics for Life Sciences Majors

−Physics 131-132: Physics for Biologists

−Department of Physics, University of Maryland

−Developed materials for a new, biology-driven physics course sequence for future health care workers and biomedical researchers.

−Participated in course planning and design with Joe Redish and Wolfgang Losert, as well as other members of the Physics Education Research Group (PERG) at Maryland.

−Served as the Technical Director for 132 labs. In collaboration with Kim Moore (head TA), developed and tested new labs, modified existing labs, and trained TAs.

Undergraduate Mentoring, Spring 2013-Fall 2014

-Supervised Andrew Shaw, a UMD undergraduate, developing a macro-confocal microscope.

Undergraduate Mentoring, Spring 2013-Fall 2014

−Supervised Dylan Powers and Sam Arrington, studying impacts into wet granular systems.

−Part of a new course: Physics 299 "Bootcamp for Freshman Majors."

−The students continued this work through their undergraduate careers.

Instructor, Spring 2013

−Physics 115 - Inquiry into Physics

−Students, who are restricted to Elementary and Secondary education majors, learn introductory physics solely by *asking and doing*.

− Held frequent discussions about the course with Vashti Sawtelle and John Layman, members of the Physics Education Research Group (PERG) at Maryland.

−Department of Physics, University of Maryland

Graduate Mentoring, Fall 2012

−Supervised John Giannini, a biophysics graduate student, measuring collective nuclear motions in *Drosophila* embryo development.

Undergraduate Mentoring, Fall 2012-Spring 2014

−Supervised Michael Lin, a UMD undergraduate, measuring bead-scale rotations in granular materials, for the first time *ever* in a 3D system.

−Culminated in a publication.

−Michael has now started graduate school in complex systems.

Undergraduate Mentoring, Summer 2012

−Supervised Emily Lim, a visiting student from Duke University, working on granular impacts.

−Part of the TREND (Training and Research Experiences in Nonlinear Dynamics) program, an NSF REU.

−Culminated in the student formally presenting her data to the TREND program and assisting with presenting at the DTRA (funding agency) poster review session, as well as coauthorship on a paper.

Adjunct Professor, Spring 2011

−Ran laboratories for Introductory Physics, developed and graded lab exams.

−Received excellent student course evaluations.

−Department of Physics, University of the Sciences in Philadelphia

Teaching Certificate, Center for Teaching and Learning, 2010

−Fulfilled 5 requirements, which included: intensive development of a teaching philosophy and having my teaching observed and discussed.
−School of Arts and Sciences, University of Pennsylvania

Substitute Lecturer, 2010
−Two weeks of classes for Physics 151 - Calculus-based Mechanics (D. Durian instructor)
−Department of Physics, University of Pennsylvania

Department Tutor, 2008-2011
−Department of Physics, University of Pennsylvania

College and University Teaching Course (EDUC 545), Spring 2006
−Learned techniques for course development and discussed prevalent issues in learning and classroom settings.
−Graduate School of Education, University of Pennsylvania
−Professor: Dr. Marybeth Gasman

Substitute Lecturer, 2006
−One week of classes for Astronomy 007 (P. Langacker instructor)
−Department of Physics, University of Pennsylvania

Teaching Assistant, 2004-06
−Physics 150 (Introductory lab, Engineers and Majors, semester 1)
−Physics 151 (Introductory lab, Engineers and Majors, semester 2)
−Physics 171 (Introductory lab, Honors Section, semester 2)
−Astronomy 007 (Lecture, The Big Bang and Beyond)
−Astronomy 012 (Lecture, Introduction to Astrophysics)
−Department of Physics and Astronomy, University of Pennsylvania

Teaching Assistant, 2001-04
−Introductory Physics Laboratory
−Taught both semesters, as well as both sequences (with/without calculus).
−Department of Physics, Bryn Mawr College

Conference and Workshop Participation

APS March Meeting
−Communication and Negotiation Skills Workshop
−Organizer and Facilitator: LGBT+ Roundtable Discussion
−March 5-9, 2018, Los Angeles, CA

APS March Meeting
−Invited Session Chair/Organizer: Women in Physics: Understanding and Improving the Climate
−Organizer and Facilitator: LGBT+ Roundtable Discussion
−March 13-17, 2017, New Orleans, LA

68th Annual Meeting of the APS Division of Fluid Dynamics
−Contributed Talk
−November 20-22, 2016, Portland, OR

Gordon Research Conference, Granular Matter
−Poster (Emma Thackray presenting)
−July 2016, Stonehill College

APS March Meeting
−2 Contributed Talks

−Emma Thackray (MHC '18) was the presenting author on one talk.
−March 14-18, 2016, Baltimore, MD

68th Annual Meeting of the APS Division of Fluid Dynamics
−November 22-24, 2015, Boston, MA

Gordon Research Conference, Soft Matter
−Poster
−August 2015, Colby-Sawyer College

67th Annual Meeting of the APS Division of Fluid Dynamics
−Contributed Talk
−November 23-25, 2014, San Francisco, CA

AAPT New Faculty Workshop
−November 13-16, 2014, College Park, MD

Gordon Research Conference, Granular and Granular-Fluid Flow
−Poster
−July 2014, Stonehill College

APS March Meeting
−Contributed Talk
−March 3-7, 2014, Denver, CO

SES 50th Annual Technical Meeting
−One biological and one granular talk
−July 28-31, 2013, Providence, RI

UMD - JHU - GWU Postdoc/Grad Student Symposium
−Talk
−May 21, 2013, Baltimore, MD

EuroMech Colloquium: Dense Flows of Soft Objects
−Talk
−May 13-15, 2013, Grenoble, France

APS March Meeting
−Contributed Talk
−March 18-22, 2013, Baltimore, MD

March Meeting Professional Development Workshop 2013
−March 17, 2013, Baltimore, MD

Dynamics Days 2013
−Chosen Short Talk - Granular Impact
−Poster - Cell Migration
−January 3-6, 2013, Denver, CO

ASCE Earth and Space Conference 2012
−Contributed Talk
−April 15-18, 2012, Pasadena, CA

Dynamics Days 2012
−Poster
−January 4-7, 2012, Baltimore, MD

64th Annual Meeting of the APS Division of Fluid Dynamics
−Contributed Talk
−November 20-22, 2011, Baltimore, MD

Frontiers of Discovery: AWIS at 40
−October 20-21, 2011, Chemical Heritage Foundation

Summer School: Granular Materials: from Simulations to Astrophysical Applications
−June 13-17, 2011, University of Maryland

Santa Fe Science Writing Workshop
−May 30-June 4, 2011, Santa Fe, NM

Nonlinear Dynamics and Fluid Instabilities in the 21st Century
−May 19-20, 2011, Haverford College

APS March Meeting
−Contributed Talk
−March 15-19, 2010, Portland, OR

61st Annual Meeting of the APS Division of Fluid Dynamics
−Contributed Talk
−November 23-25, 2008, San Antonio, TX

2nd Metro Gotham Condensed Matter Conference
−Poster
−April 9, 2010, New York Academy of Sciences

1st Metro Gotham Condensed Matter Conference
−November 21, 2009, New York Academy of Sciences

Mid-Atlantic Soft Matter Workshop
−Short Talk
−November 20, 2009, Johns Hopkins University

APS March Meeting
−Contributed Talk
−March 16-20, 2009, Pittsburgh, PA

Royal Society Meeting: Colloids, grains and dense suspensions
−Poster (Jerry Gollub presenting)
−March 9-10, 2009, London, UK

Mid-Atlantic Soft Matter Workshop
−Short Talk
−October 17, 2008, University of Delaware

Gordon Research Conference, Granular and Granular-Fluid Flow
−Poster
−June 22-27, 2008, Colby College

100th Statistical Mechanics Conference
−Short talk
−December 13-18, 2008, Rutgers University

J-Fest Workshop
−Speaker
−October 24, 2007, University of Pennsylvania

APS March Meeting
−March 5-9, 2007, Denver, CO

Soft Matter Workshop
−Short talk
−November 2, 2006, University of Pennsylvania

4th Annual Northeastern Granular Materials Workshop
−June 9, 2006, City College of New York

Outreach and Related Activities

SciTech Cafe
−Monthly public lectures in Northampton, MA, attendance ≈100
−Co-organizer in 2017-18 (with K. Aidala), taking over in 2018-19 season.

Conference for Undergraduate Women in Physics (CUWiP), January 12-14 2018
−Communication and Negotiation Skills Workshop
−Rochester Institute of Technology

Soft Matter Day 2, July 21, 2017
−Head Organizer in collaboration with UMass Physics
−Invited Research Talks, Posters, Demonstrations (open to public)
−Mount Holyoke College

"You're Never Too Old to Play in the Sandbox," February 27, 2017
−Public Lecture at SciTech Cafe in Northampton, MA

Conference for Undergraduate Women in Physics (CUWiP), January 13-15 2017
−Panelist: *Academic and Non-Academic Career Opportunities*
−Harvard University

Soft Matter Day, July 22, 2016
−Head Organizer in collaboration with UMass Physics
−Invited Research Talks, Posters, Demonstrations (open to public)
−Mount Holyoke College

Conference for Undergraduate Women in Physics (CUWiP), January 15-17 2016
−Panelist: *Diversity Panel* , *Careers in Education and Academia*
−Wesleyan University

"The Physics of Superheroes," August 5, 2015
−Public Lecture at South Hadley Public Library

"Squishy Physics: The Exotic Behavior of Everyday Stuff," May 13, 2015
−Guest Lecture at Greenfield Middle School

"When Sand Turns Fluid," March 10, 2015
−Guest Lecture for GEOL 224 at MHC (M. McMenamin instructor)

Big Top Physics, April 26, 2014
−APS Booth at the USA Science and Engineering Festival
−Ran the smoke ring cannon station, demonstrating vortex formation in turbulent fluids.

Physics at Six Flags Day, April 20, 2012
−Helped to set up and run the accelerometer (Tower of Doom) and oobleck stations.
−Worked with employees of APS and AIP to demonstrate and explain physical concepts to high school students.

Girls In Focus with Technology (GIFT) conference, 2011
−Invited talk to middle school girls "Physical Science and Engineering: Getting Involved."

Tool Guru, Wolf Nanofabrication Facility, UPenn, 2008-2011
−Responsible for training new users as well as routine maintenance of equipment.

Mary McLeod Bethune School Science Fair, 2011
−Judged 7^{th} and 8^{th} grade projects.

Philadelphia Area Girls Enjoying Science (PAGES), 2010
−Lead three sessions experimenting with viscosity and non-Newtonian fluids.

High School Math and Science tutor, 2005-2011
−Greater Philadelphia area

NanoDay @ Penn, 2005
−Designed and presented a booth about Drndic Lab research
−Nano/Bio Interface Center (NBIC), University of Pennsylvania

Prior Research Experience

Research Assistant, 2006-2010
−Department of Physics and Astronomy, University of Pennsylvania
−Microfluidics, microfabrication, complex fluids, jamming, biophysics, synthesis and characterization of microgel colloids, optical microscopy

−Advisors: Doug Durian and Jerry Gollub

Researcher, 2004-05
−Department of Physics and Astronomy, University of Pennsylvania
−Synthesis of nanoparticles, device nanofabrication, AFM/TEM/SEM
−Advisor: Marija Drndic

Undergraduate Researcher (Honors Thesis), 2003-04
−Department of Physics, Bryn Mawr College
−Solid-state NMR of organic molecules
−Advisor: Peter Beckmann

Undergraduate Research Fellow (NSF REU), 2004
−Department of Chemistry, Columbia University
−Synthesis and NMR characterization of nanoparticles and ligand exchange
−Advisor: Nicholas Turro

Technical Skills

- *Imaging and Microscopy*: fluorescence, confocal, TEM, SEM, AFM, laser sheet scanning
- *Micro/Nanofabrication*: Photolithography, ebeam lithography, soft lithography
- *Physical Analysis*: Rheometry, ultracentrifugation, dynamic light scattering
- *Chemical Analysis*: NMR, FT-IR, HPLC
- *Image Analysis*: Particle tracking, particle image velocimetry, motion and network analysis
- *Synthesis*: Gels, microgel particles, nanoparticles
- *Software*: Microsoft Office, Adobe CS, Matlab, Mathematica, Maple, Labview, Origin, Kaleidagraph, Igor, IDL, COMSOL, ImageJ.
- *Languages*: C/C++, Fortran, Linux shell scripts, Python
- *Etc*: HTML, LaTeX, CAD design, 3D printing, laser cutting, vacuum forming

Affiliations

- American Physical Society (APS)
- American Association for the Advancement of Science (AAAS)
- LGBT+ Physicists

References and Other Information

Please email me (knordstr@mtholyoke.edu) with more details about the kind of reference (i.e. teaching vs research supervisor) and I will provide appropriate contact information. Additionally, I have written various pieces in popular publications, as part of my AAAS fellowship as well as independently. I am pleased to provide a portfolio upon request. Lastly, some of my work has been covered by news organizations. I try to keep track of these on my lab website, but to be safe in case I have forgotten something, please email me your request.