# NATHAN DENNIS BURROWS, PH. D.

**CURRICULUM VITAE** 

Stanford University & SLAC National Accelerator Laboratory Stanford-SLAC CryoEM Center 2575 Sand Hill Road MS-26 Menlo Park, CA 94025

EDUCATION		
University of Minnesota, Minneapolis, MN		
Doctor of Philosophy in Materials Chemistry	February 2013	
Master of Science in Materials Chemistry	February 2009	
Concordia University, St. Paul, MN		
Bachelor of Arts, Majoring in Chemistry & Minoring in Theatre	May 2007	
Research Experience		
CryoEM Specialist	June 2022 – Present	
SLAC National Accelerator Laboratory, Menlo Park, CA		
• Staff scientist in the Stanford-SLAC CryoEM Center.		
Assistant Research Professor	July 2019 – June 2021	
MRSEC IRG4 Postdoctoral Scholar	August 2016 – June 2019	
Pennsylvania State University, University Park, PA		
<ul> <li>Synthesis and AC electric field directed assembly of functionalized nar Dr. Chris Keating, postdoctoral mentor.</li> </ul>	nomaterials,	
Postdoctoral Research Associate		
University of Illinois at Urbana-Champaign, Urbana IL	Feb. 2013 – July 2016	
<ul> <li>Gold Nanorod Synthesis: A Multivariate Factorial Design of Experime Dr. Catherine J Murphy, postdoctoral mentor.</li> </ul>	ents;	
<ul> <li>Applied experimental design statistic methods to improve the mechan synthesis of gold nanorods.</li> </ul>	istic understanding of the	
Graduate Student Research Assistant		
University of Minnesota, Minneapolis, MN	June 2007 – Feb. 2013	
<ul> <li>The Study of Oriented Aggregation: A Nonclassical Nanocrystal Grow Dr. R. Lee Penn, thesis advisor.</li> </ul>	vth Mechanism;	
<ul> <li>Applied transmission electron microscopy and cryo-transmission elect study of the oriented aggregation crystal growth mechanism and its kin</li> </ul>	n electron microscopy techniques in the l its kinetics.	
Visiting Graduate Student Research Assistant Technion-Israeli Institute of Technology, Haifa, Israel	May 2011	
• Examined the effects of solvent properties on oriented aggregation the transmission electron microscopy; Dr. Yeshayahu (Ishi) Talmon, men	rough non-aqueous cryogenic tor & host.	
University of Minnesota Graduate School International Thesis Researce	ch Grant.	
Undergraduate Student Research Experience		
Concordia University, St. Paul, MN	Aug. 2006 – May 2007	
<ul> <li>The Synthesis of Hydrophobic Ionic Liquids: Efficiency of Ionic Excha Dr. David Blackburn, advisor.</li> </ul>	nge Metathesis;	
Undergraduate Student Research Experience (REU program)		
Stony Brook University, Stony Brook, NY	May 2006 – Aug. 2006	
• Nanotube Analog: A Directed Synthesis; Dr. Joseph Lauher & Dr. Fra	nk Fowler, advisors.	
Undergraduate Student Research Experience		
Concordia University, St. Paul, MN	Aug. 2005 – May 2006	

• Developed the Microwave Synthesis of Ionic Liquids for the Organic Chemistry Lab; Dr. David Blackburn, advisor.

### **RESEARCH PUBLICATIONS**

## (1000+ Times Cited, h-Index: 16)

PUBLISHED RESEARCH

- Metch, Jacob W.; Burrows, Nathan D.; Murphy, Catherine J.; Pruden, Amy; Vikesland, Peter J.; Metagenomic Analysis of Microbial Communities Yields Insight into Impacts of Nanoparticle Design. *Nature Nanotechnology* (2018) DOI: 10.1038/s41565-017-029-3
- Abtahi, Seyyed M.H.; Burrows, Nathan D.; Idesis, Fred A.; Murphy, Catherine J.; Saleh, Navid B.; Vikesland, Peter J.; Sulfate Mediated End-to-End Assembly of Gold Nanorods. *Langmuir* (2017) vol. 33 (6) pp. 1486-95 DOI: 10.1021/acs.langmuir.6b04114
- Burrows, Nathan D.; Harvey, Samantha; Idesis, Fred A.; Murphy, Catherine J.; Understanding the Seed-Mediated Growth of Gold Nanorods through a Fractional Factorial Design of Experiments. *Langmuir* (2017) vol. 33 (8) pp. 1891-907 DOI: 0.1021/acs.langmuir.6b03606
- Burrows, Nathan D.; Lin, Wayne; Hinman, Joshua G.; Dennison, Jordan M.; Vartanian, Ariane M.; Abadeer, Nardine S.; Grizincic, Elissa M.; Jacob, Lisa M.; Li, Ji; Murphy, Catherine J.; Surface Chemistry of Gold Nanorods.<sup>†</sup> Langmuir (2016) vol. 32 (39) pp. 9905-21 DOI: 10.1021/acs.langmuir.6b02706
- Gao, Zhe; Burrows, Nathan D.; Valley, Nicholas A.; Schatz, George C.; Murphy, Catherine J.; Haynes, Christy L.; In Solution SERS Sensing using Mesoporous Silica-coated Gold Nanorods. *Analyst* (2016) iss. 141 pp. 5088-95 DOI: 10.1039/c6an01159d
- Wu, Xuewang; Ni, Yuxiang; Zhu, Jie; Burrows, Nathan D.; Murphy, Catherine J.; Dumitrica, Traian; Wang, Xiaojia; Thermal Transport across Surfactant Layers on Gold Nanorods in Aqueous Solution. *ACS Appl. Mater. Interfaces* (2016) vol. 8 (16) pp. 10581-9 DOI: 10.1021/acsami.5b12163
- 11. Burrows, Nathan D.; Vartanian, Ariane M.; Abadeer, Nardine S.; Grizincic, Elissa M.; Jacob, Lisa M.; Lin, Wayne; Li, Ji; Dennison, Jordan M.; Hinman, Joshua G.; Murphy, Catherine J.; Anisotropic Nanoparticles and Anisotropic Surface Chemistry.<sup>†</sup> J. Phys. Chem. Lett. (2016) vol. 7 (4) pp. 632-41 DOI: 10.1021/acs.jpclett.5b02205
- Kim, Donghyuk; Campos, Antonio R.; Datt, Ashish; Gao, Zhe; Rycenga, Matthew; Burrows, Nathan D.; Greeneltch, Nathan G.; Mirkin, Chad A.; Murphy, Catherine J.; Van Duyne, Richard P.; Haynes, Christy L.; Microfluidic-SERS devices for one shot limit-of-detection. *Analyst* (2014) iss. 139 pp. 3227-34 DOI: 10.1039/c4an00357h
- Burrows, Nathan D.; Stemig, Amanda; Sabyrov, Kairat; Kesselman, Ellina; Talmon, Yeshayahu; Penn, R. Lee; Crystalline Nanoparticle Aggregation in Non-Aqueous Solvents.<sup>†</sup> CrystEngComm (2014) vol. 16 (8) pp. 1472-81 DOI: 10.1039/c3ce41584h
- Lohse, Samuel E.; Burrows, Nathan D.; Scarabelli, Leonardo; Liz-Marzán, Luis M.; Murphy, Catherine J.; Anisotropic Noble Metal Nanocrystal Growth: The Role of Halides.<sup>†</sup> Chem. Mater. 25<sup>th</sup> Anniversary Special Issue (2013) vol. 26 (1) pp. 34-43 DOI: 10.1021/cm402384j
- Burrows, Nathan D.; Penn, R. Lee; Cryogenic Transmission Electron Microscopy: Aqueous Suspensions of Nanoscale Objects. *Microsc. Microanal.* (2013) vol. 19 (6) pp. 1542-53 DOI: 10.1017/S1431927613013354
- 6. **Burrows, Nathan D.**; Hale, Christopher R.H.; Penn, R. Lee; Effect of pH on the Kinetics of Crystal Growth by Oriented Aggregation. *Cryst. Growth Des.* (2013) vol. 13 (8) pp. 3396-403 DOI: 10.1021/cg4001939
- 5. Sabyrov, Kairat; **Burrows, Nathan D.**; Penn, R. Lee; Size-Dependent Anatase to Rutile Phase Transformation and Particle Growth. *Chem. Mater.* (2012) vol. 25 (8) pp. 1408-15 DOI: 10.1021/cm302129a
- Burrows, Nathan D.; Hale, Christopher R.H.; Penn, R. Lee; Effect of Ionic Strength on the Kinetics of Crystal Growth by Oriented Aggregation. *Cryst. Growth Des.* (2012) vol. 12 (10) pp. 4787-97 DOI: 10.1021/cg3004849

- Yuwono, Virany M.; Burrows, Nathan D.; Soltis, Jennifer A.; Do, Tram Anh; Penn, R. Lee; Aggregation of Ferrihydrite Nanoparticles in Aqueous Systems. *Faraday Discuss*. (2012) vol. 159 (1) pp. 235-45 DOI: 10.1039/c2fd20115a
- Yuwono, Virany M.; Burrows, Nathan D.; Soltis, Jennifer A.; Penn, R. Lee; Oriented Aggregation: Formation and Transformation of Mesocrystal Intermediates Revealed. J. Am. Chem. Soc. (2010) vol. 132 (7) pp. 2163-5 DOI: 10.1021/ja909769a
- 1. **Burrows, Nathan D.**; Yuwono, Virany M.; Penn, R. Lee; Quantifying the Kinetics of Crystal Growth by Oriented Aggregation.<sup>†</sup> *MRS Bulletin* (2010) vol. 35 (2) pp. 133-7 DOI: 10.1557/mrs2010.633

† Invited publication.

# PUBLISHED BOOK CHAPTERS

 Lohse, Samuel E.; Burrows, Nathan D.; Scarabelli, Leonardo; Liz-Marzán, Luis M.; Murphy, Catherine J.; Anisotropic Noble Metal Nanocrystal Growth: The Role of Halides. In *Colloidal Synthesis of Plasmonic Nanometals*; Liz-Marzán, Luis M., Ed.; Jenny Stanford Publishing, 2020; pp 489–514. DOI:10.1201/9780429295188.

## **Research Funding**

FUNDING RECEIVED

UMN Graduate School International Thesis Research Grant 2011

# **RESEARCH PRESENTATIONS (ORAL & POSTERS)**

- ♦ Burrows, Nathan D.; Keating, Christine D.; Tuning the dielectrophoretic assembly of dielectric particles through surface functionalization. *Directed Assembly of Molecules and Particles*. 92<sup>nd</sup> American Chemical Society (ACS) Colloid & Surface Science Symposium (June 2018) Stage College, PA. *Oral Presentation*.
- Burrows, Nathan D.; Alexander, Natalia; Ibrahim, Ismail; Keating, Christine D.; Tuning the dielectrophoretic assembly of dielectric and semiconducting particles through surface functionalization. *Responsive, Programmable Assembly of Active Colloids for Functional Materials*, Division of Colloids and Surface Chemistry, 254<sup>th</sup> ACS National Meeting (August 2017) Washington, D.C. *Oral Presentation*.
- ♦ Burrows, Nathan D.; Harvey, Samantha; Idesis, Fred A.; Murphy, Catherine J.; Understanding the Seed-Mediated Growth of Gold Nanorods through a Fractional Factorial Design of Experiments. *Poster Presentation*.
  - Noble Metal Nanoparticles: From Crystal Form to Active Functions in Physics, Chemistry and Biology, Gordon Research Seminar (June 2016) Mount Holyoke College, South Hadley, MA.
  - Noble Metal Nanoparticles: From Crystal Form to Active Functions in Physics, Chemistry and Biology, Gordon Research Conference (June 2016) Mount Holyoke College, South Hadley, MA.
- Burrows, Nathan D.; Harvey, Samantha; Murphy, Catherine J.; Mastering the Seed-Mediated Synthesis of Gold Nanorods. *Metals, Nanoscience*, Division of Inorganic Chemistry, 250<sup>th</sup> ACS National Meeting (September 2015) Boston, MA. *Oral Presentation*.
- ♦ Burrows, Nathan D.; Mastering Gold Nanorod Synthesis: A Multivariate Factorial Design of Experiments. Nanohour Seminar Series, Beckman Institute, University of Illinois at Urbana – Champaign (December 2014) Urbana, IL. Oral Presentation.
- ♦ Burrows, Nathan D.; Lohse, Samuel; Murphy, Catherine J.; Gold Nanorod Synthesis: A Multivariate Factorial Design of Experiments. *Basic Research in Colloids, Surfactants and Nanomaterials*, Division of Colloid and Surface Chemistry, 248<sup>th</sup> ACS National Meeting (August 2014) San Francisco, CA. *Oral Presentation*.
- **Burrows, Nathan D.;** Lohse, Samuel E.; Murphy, Catherine J.; Gold Nanorod Synthesis: A Multivariate Factorial Design of Experiments. *Poster Presentation*.
  - Noble Metal Nanoparticles: Synthesis, Characterization, and Applications, Gordon Research Seminar (June 2014) Mount Holyoke College, South Hadley, MA.
  - Noble Metal Nanoparticles: Synthesis, Characterization, Modeling and Applications, Gordon Research Conference (June 2014) Mount Holyoke College, South Hadley, MA.

- Burrows, Nathan D.; Boulos, Stefano; Alkilany, Alaaldin M.; Penn, R. Lee; Murphy, Catherine J.; Cryo-TEM characterization of gold nanorod growth in solutions of CTAB with trace Ag<sup>+</sup>. Anisotropic Colloids: Synthesis, Fabrication, Assembly, and Applications, Division of Colloid and Surface Chemistry, 246<sup>th</sup> ACS National Meeting (September 2013) Indianapolis, IN. Oral Presentation.
- ♦ Burrows, Nathan D.; Yuwono, Virany M.; Hale, Christopher R.H.; Penn, R. Lee; Oriented aggregation: Examining the kinetic effect of ionic strength and pH on the growth of goethite nanorods from ferrihydrite nanoparticles. *Mechanisms of Non-Classical Mineralization*, Division of Geochemistry, 242<sup>nd</sup> ACS National Meeting (August 2011) Denver, CO. *Oral Presentation*.
- Yuwono, Virany M.; Burrows, Nathan D.; Soltis, Jennifer A.; Do, Tram Anh; Penn, R. Lee; In situ characterization of metal oxide aggregates using cryo-TEM. Assessing the Effective Reactivity of Aggregated Environmental Nanoparticles, Division of Geochemistry, 242<sup>nd</sup> ACS National Meeting (August 2011) Denver, CO. Oral Presentation.
- ◆ **Burrows, Nathan D.**; Hale, Christopher R.H.; Yuwono, Virany M.; Penn, R. Lee; Confidently Determining the Effect of Ionic Strength on the Kinetics of Crystal Growth of Iron Oxide Nanoparticles by Oriented Aggregation. *Poster Presentation*.
  - o Microscopy Across the Disciplines, Minnesota Microscopy Society (January 2012) Minneapolis, MN.
  - 7<sup>th</sup> Annual Minnesota Nanotechnology Workshop, University of Minnesota (November 2011) Minneapolis, MN.
  - 2011 Annual Industrial Partnership for Research in Interfacial and Materials Engineering (IPRIME) Meeting, University of Minnesota (June 2011) Minneapolis, MN.
  - 0 45<sup>th</sup> Annual Scientific Meeting, Israel Society for Microscopy (May 2011) Kibbutz Hagoshrim, Israel.
- Burrows, Nathan D.; Yuwono, Virany M.; Kumar, Sandeep; Soltis, Jennifer A.; Tsapatsis, Michael; Penn, R. Lee; Characterizing Aggregative Nanoparticle Growth using Cryo-TEM. 2010 Annual IPRIME Meeting, University of Minnesota (June 2010) Minneapolis, MN. Poster Presentation.
- Burrows, Nathan D.; Penn, R. Lee; Quantifying the Kinetics of Crystal Growth by Oriented Aggregation of Iron Oxide Nanoparticles. 9<sup>th</sup> Annual Graduate Student Research Symposium, Department of Chemistry, University of Minnesota (May 2010) Minneapolis, MN. Oral Presentation.
- Burrows, Nathan D.; Hale, Christopher R.H.; Yuwono, Virany M.; Penn, R. Lee; Influencing the Kinetics of Growth by Oriented Aggregation of Iron Oxide Nanoparticles. *Nanoscience Synthesis & Sci-Mix Post Sessions*, Division of Inorganic Chemistry, 237<sup>th</sup> ACS National Meeting (March 2009) Salt Lake City, UT. *Poster Presentation*.
- Burrows, Nathan D.; Brooks Jr., Michael A.; Blom, Amy J.; Blackburn, David W.; Efficiency of Ionic Exchange Metathesis in the Synthesis of Hydrophobic Ionic Liquids. Undergraduate Research Poster Session: Analytical Chemistry, Division of Chemical Education, 233<sup>rd</sup> ACS National Meeting (March 2007) Chicago, IL. Poster Presentation.
- ♦ Burrows, Nathan D.; Blackburn, David W.; Microwave Synthesis of Ionic Liquids in the Undergraduate Organic Chemistry Laboratory. Undergraduate Research Poster Session: Chemical Education, Division of Chemical Education, 233<sup>rd</sup> ACS National Meeting (March 2007) Chicago, IL. Poster Presentation.

#### **TEACHING EXPERIENCE**

University of Minnesota, Minneapolis, MN	
CHEM 1062: Chemical Principals II	Spring 2022
• Adjunct Lecturer, In-Person Principle Instructor for 300+ students	
Pennsylvania State University, State College, PA	
CHEM 448: Surface Chemistry	Fall 2016
Guest Lectured on Crystal Structure and Defects	
Research Mentoring of Undergraduates	

• Tw	o Undergraduates for a summer (REU), One Master student for a ser	mester
University	of Illinois at Urbana-Champaign, Urbana, IL	
Researc	ch Mentoring of Undergraduates	
● Eig	ht Undergraduates for a summer (REU), Two Undergraduates for a f Fhree Undergraduates for a semester	ull year &
University CHEM	of Minnesota, Minneapolis, MN 1065: Chemical Principals I Laboratory	Fall 2012
• Em	aployed new instruction format centered on the scientific process	
• Pro CHEM	ocess Oriented / Guided Inquiry Learning (POGIL) 1017: Introductory Chemistry Laboratory	Summer 2012
• Sol CHEM	e instructor for 40+ non-science major, non-traditional students 5210 Materials Characterization	Spring 2010 & 2011
<ul> <li>Gr</li> <li>Genera</li> <li>CHEM</li> <li>CHEM</li> <li>Researc</li> <li>Th</li> </ul>	aduate student course, guest lectured both semesters l Chemistry Foundations (weekly recitation sessions) 1021 Chemical Principals I Laboratory 2111 Introduction to Analytical Chemistry Laboratory 2h Mentoring of Undergraduates ree Undergraduates for a full year & One Undergraduate for a summe	Fall 2009 Spring & Fall 2008 Summer & Fall 2007 er (REU)
Concordia	University, St. Paul, MN	× /
Genera	l & Organic Chemistry tutoring (one-on-one & recitation)	Fall 2003 – Spring 2007
HONORS AND	AWARDS	
• Centre	for Nanoscale Science Outreach Leadership Award	April 2018
Office of	of Postdoctoral Affairs Travel Award	August 2017
• NRMN	-CAN Postdoc Mentor Training Workshop Travel Award	April 2017
• NextPr	of Science 2015	March 2015
• Gordon	Research Conference Encore Poster Session	June 2014
<ul> <li>ACS Pc</li> </ul>	ostdoc to Faculty Workshop Travel Award	June 2013
<ul> <li>MN AC</li> </ul>	CS Travel Grant	August 2011
• UMN (	Graduate School International Thesis Research Grant	2011
• UMN (	Chemistry Departmental Fellowship	Sept. 2007 – Sept. 2008
Researce	h Experience for Undergraduates at Stony Brook University	May 2006 – Aug. 2006
• Paul W	. Stor Chemistry Scholarship	May 2005, May 2006
• Freshm	en Chemistry Award	May 2004
• Dean's	Natural Science Scholarship	2003, 2004, 2005, 2006
• Eagle S	cout, Boy Scouts of America	2000
PROFESSIONAL	Development & Training	
• Grantsm	anship Training	
0	NIH Grant Writing Workshop and Panel Discussion	May $22^{nd}$ , 2018
0	Grant Writing Workshop & Seminar Grant Writing in the Physical Sciences, NSE Proposals	Feb. 14 <sup></sup> , 2018 Sept. 21 <sup>st</sup> 2016
0	Science Writing: How to Make Your Proposal Stand Out From the Crowd	Aug. 6 <sup>th</sup> , 2015
0	How to Use Grant Forward – and Find Grants!	June 12 <sup>th</sup> , 2015
0	Writing Successful Grant Proposals	April 29 <sup>th</sup> , 2015

 $Burrows-CV-pg \ 5$ 

•	Conduct	of Research Training	
	0	SerialEM for Data Acquisition Short Course	July 31 <sup>st</sup> , 2022
	0	Data Ethics Workshop	Feb. 27 <sup>th</sup> , 2019
	0	Convergence of Transmission Electron Microscopy Methods for	Nov. 2 <sup>nd</sup> 2017
		Materials and Life Sciences	
	0	Nanofab Safety Training	May 31 <sup>st</sup> , 2017
	0	Project Management for Scientists	Feb. 21 <sup>st</sup> , 2017
	0	EHS Safety Training	Sept. 6th 2016
	0	Mathematica Image Processing Workshop	June 23 <sup>rd</sup> , 2015
	0	Conventional TEM Sample Preparation Techniques	Feb. 4 <sup>th</sup> , 2015
	0	Setting Up a Research Lab: Tips for a Successful First Year	July 8 <sup>th</sup> , 2014
	0	Biological Structures Imaging Workshop	Nov. $13^{\text{th}} - 14^{\text{th}}$ , 2013
	0	Laboratory Safety Training	Feb. 2013
	0	Creating a Data Management Plan Workshop	January 13 <sup>th</sup> , 2012
	0	Nanostructural and Materials and Processes Partnership Program's	J ) ,
		Cryogenic Electron Microscopy short course sponsored by UMN's	June 2010
		Industrial Partnership for Research in Interfacial and Materials	5
		Engineering	
	0	Nanoscale Imaging and Characterization Summer Pilot Course	Summer 2010
	0	Laboratory Safety Training	May 2008
•	Science (	Communication Trainina	5
	0	Improving Communication through Improve Theater	Nov. 12 <sup>th</sup> , 2018
	0	Telling the Story	May 15 <sup>th</sup> , 2018
	0	Strategies to Engage Non-Technical Audience on Technical Research	May 8 <sup>th</sup> , 2018
	0	Science Communication Workshop	Feb. 6 <sup>th</sup> , 2017
	0	Seminar on Seminars	Aug. 28 <sup>th</sup> , 2014
•	<i>STEM E</i>	ducation Training	8 /
	0	Planning your First Course	Mar. 27 <sup>th</sup> . 2019
	0	Teaching your First Course	April 28 <sup>th</sup> , 2017
	0	UMN Mentorship Program for Aspiring Chemistry Teachers	Spring 2011
		Mentor: R. Lee Penn	1 8
		Class: CHEM 5210: Materials Characterization	
		<ul> <li>Guest Lectured on Cryogenic Electron Microscopy Technique</li> </ul>	28
•	Mentors	hin Training	
-	0	Challenging Conversations: Managing Conflict & Difficult	Nov 8 <sup>th</sup> 2017
	Ū.	Conversations	
	0	NRMN-CAN Postdoc Mentor Training Workshop	May $7^{\text{th}} - 8^{\text{th}}$ , 2017
	0	Developing Your People	Feb. 21 <sup>st</sup> . 2017
•	Diversity	- Equity and Inclusion Training	,
-	0	Becoming an Active Witness Who Hears Sees Feels and Does	Dec. 8 <sup>th</sup> 2020
	0	Safer People Safer Places (at PSU)	Sept. 11 <sup>th</sup> 2018
	0	NRMN-CAN Postdoc Mentor Training Workshop	Max $7^{\text{th}} - 8^{\text{th}} - 2017$
	0	L GBTO Safe Zone 101 Training Workshop (at PSU)	April $12^{\text{th}} - 2017$
	0	LGBTQ Safe Zone 101 Training Workshop (at 150)	Sept 21 <sup>st</sup> 2016
	0	LGBTQ Safe Zone Training Workshop (at LIULC)	Oct $10^{\text{th}}$ 2013
	0	LGBTO Safe Zone Training Workshop (at UMN)	Oct 14 2010
•	Mant -1	Least & our Zone Training Workshop (at civity)	
•		Fealing like a fake. Overcoming the Impostor Dhanamanan	Oct 2nd 2019
	0	reening like a lake: Overconning the impostor Phenomenon	000.2 , 2018

	0	Sanity in the midst of Insanity: How to survive (Postdoctoral Mental Health Workshop)	Aug. 30 <sup>th</sup> , 2018
	0	Coping With and Identifying Stress: A Workshop on Graduate Student Mental Health	October 17 <sup>th</sup> , 2012
• 1	Faculty S	earch Preparation	
	0	Writing a Diversity Statement	April 19 <sup>th</sup> , 2019
	0	Interviews and Negotiations for Faculty Positions (Panel Discussion)	Jan. 16 <sup>th</sup> 2019
	0	Diversity Statements for Faculty Positions	Sept. 12 <sup>th</sup> , 2018
	0	Preparing for Skype/phone Interviews	Dec. 13 <sup>th</sup> , 2017
	0	NextProf Science 2015	May $26^{\text{th}} - 29^{\text{th}}$ , 2015
	0	Preparing for Academic Interviews (Panel Discussion)	Oct. 1 <sup>st</sup> , 2014
	0	Preparing for Next Year's Faculty Job Search	Mar. 13 <sup>th</sup> , 2014
	0	How to Understand Academia & Succeed:	Mar. 12 <sup>th</sup> , 2014
		a Session for Jobseekers & Employees	
	0	Behind the Scenes with a Search Committee	Feb. 28 <sup>th</sup> , 2014
	0	Negotiating a Start-Up Package Panel Discussion	Nov. 21 <sup>st</sup> , 2013
	0	ACS Postdoc to Faculty Workshop	Sept. $6^{th} - 7^{th}$ , 2013
	0	Academic Job Search: Practical Advice Workshop	April 18 <sup>th</sup> , 2013
	0	Planning for a Successful Postdoc	March 8 <sup>th</sup> , 2013
	0	UMN Chemistry Department's Academic Careers Workshop Series	Spring 2011
		<ul> <li>Academic Careers at R1s and PUIs</li> </ul>	March 26 <sup>th</sup> , 2011
		<ul> <li>Introduction to Crafting an Application</li> </ul>	March 26 <sup>th</sup> , 2011
		<ul> <li>Being an Assistant Professor at a R1</li> </ul>	April 19 <sup>th</sup> , 2011
		<ul> <li>Active Learning and Teaching Philosophy</li> </ul>	April 26 <sup>th</sup> , 2011
	0	Workshop: Securing a Post-Doctoral Position	May 8 <sup>th</sup> , 2010
PROFESS	IONAL 1	Memberships	
• 1	America	n Chemical Society	2003 – Present
• 1	Microsco	ppy Society of America	2022 – Present
• 1	MN Que	eer Science: A Network of Lesbian, Gay,	2010 - 2013
	Bi, T	Transgender, and Ally Scientists and Engineers	
• 1	umn Q	ueer Graduate and Professional Student Association	2007 - 2013
• 7	Tetra De	elta Chemistry Club, Concordia University, St. Paul, MN	2003 - 2007
	0	President (2005 – 2007), Secretary (2003 – 2005)	
SERVICE	& Out	TREACH	
•	Service to	the Profession & Scholarship	
-	0	23 Blind Peer Reviews of Journal Manuscripts	2013 – Present
	-	(www.publons.com/a/1263611/)	
		<ul> <li>ACS Applied Materials &amp; Interfaces, ACS Nano, Angewandte</li> </ul>	
		Chemie International Edition, Journal of Biophotonics,	
		Chemistry of Materials, ChemistrySelect, ChemPlusChem,	
		Materials, Journal of Nanostrucutre in Chemistry, Journal of	
		Physical Chemistry C,	
	0	Peer Review of Grant Proposals	
		■ NSF	2014 - Present
	0	Co-Organized Symposia	
		<ul> <li>Advances in colloid &amp; surface chemistry enabled by cryogenic</li> </ul>	Aug. 19, 2018
		and in situ liquid-cell electron microscopy, Division of Colloid	Ψ.
		and Surface Chemistry, National ACS Meeting, Boston	

0	Discussion Leader, Nanoparticle Synthesis & Characterization Session,	June 2014
	Noble Metal Nanoparticles Gordon Research Seminar	
Service to	Organization	
0	PREM Penn Pals Program at PSU (Minority Mentorship in STEM)	Summer 2019
0	Penn State MRSEC Website Redesign Committee	2017 - 2019
0	PREM Penn Pals Program at PSU (Minority Mentorship in STEM)	Summer 2017
0	Penn State MRSEC Graduate-Postdoc Advisory Committee Member	2016 - 2019
0	Penn State MRSEC Recruitment and Retention Team	2016 - 2018
0	Penn State Eberly College of Science Climate and Diversity Postdoc	2016 - 2017
	Subcommittee, Chemistry Department Postdoc Representative	
0	Data Curation Network Postdoctoral Consultation	Nov. 4 <sup>th</sup> , 2016
0	Penn State Eberly College of Science Fall Science Undergraduate	Oct. 6 <sup>th</sup> , 2016
	Research Poster Exhibition Volunteer Judge	
Service to	Educational Outreach	
0	Penn State MRSEC Materials Research Institute Tour Team	2018 - 2019
0	MN ACS Chemist in the Library Community Outreach	Aug. 2005 – Feb. 2013
0	Steering Committee Member for the National Chemistry Week and	2005
	Grande Expo celebrating the 100 <sup>th</sup> anniversary of the MN ACS	

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### **PROFESSIONAL REFERENCES**

- Dr. Christine D. Keating Distinguished Professor of Chemistry The Pennsylvania State University, University Park, PA 814-863-7832 keating@chem.psu.edu
- Dr. Catherine J. Murphy Professor of Chemistry Larry Faulkner Endowed Chair in Chemistry Department Head University of Illinois at Urbana-Champaign, Urbana, IL 217-333-7680 murphycj@illinois.edu
- Dr. R. Lee Penn Director of Undergraduate Studies, Merck Professor of Chemistry, Distinguished University Teaching Professor, University of Minnesota, Minneapolis, MN

612-626-4680 rleepenn@umn.edu