Noah Malmstadt

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Academic Positions

Professor **Nov. 2018-Present**
Mork Family Department of Chemical Engineering and Materials Science
Department of Biomedical Engineering
Department of Chemistry
University of Southern California

Associate Chair **Aug. 2020-Present**
Mork Family Department of Chemical Engineering and Materials Science
University of Southern California

Associate Chair of Graduate Programs **Oct. 2018-Aug. 2020**
Mork Family Department of Chemical Engineering and Materials Science
University of Southern California

Associate Professor **March 2014-Nov. 2018**
Mork Family Department of Chemical Engineering and Materials Science
Department of Biomedical Engineering
Department of Chemistry
University of Southern California

Assistant Professor **Aug. 2007-March 2014**
Mork Family Department of Chemical Engineering and Materials Science
Department of Biomedical Engineering
University of Southern California

Postdoctoral Fellow **Sept. 2004-Aug. 2007**
Biohybrid Microsystems Lab, Department of Bioengineering
University of California at Los Angeles
Professor Jacob J. Schmidt, Supervisor

Senior Research Fellow **Aug. 2003-Aug. 2004**
Molecular Bioengineering Lab, Department of Bioengineering
University of Washington
Professors Patrick S. Stayton and Allan S. Hoffman, Supervisors

Education

Doctor of Philosophy, Bioengineering **Aug. 2003**
University of Washington
Seattle, Washington

Bachelor of Science with Honors, Chemical Engineering **June 1997**
California Institute of Technology
Pasadena, California

Research Interests

- Microfluidic green chemistry for nanomaterial synthesis
- Computational methods for control and *in situ* monitoring of reactors for materials synthesis
- Engineering novel lipid/polymer hybrid materials for biophysical research, diagnosis, drug discovery, and drug delivery
- Physicochemical consequences of oxidative damage to and nanoparticle interactions with cell membranes
- Interactions between integral membrane proteins and lipid bilayers
- 3D-printed modular microfluidic systems for synthesis and diagnostics

Honors

- 2020-present: Senior Member, National Academy of Inventors
- 2017-2020: Member, National Academy of Inventors
- 2016 Journal of Laboratory Automation JALA Ten Honoree
- 2016 USC PhD Student Mentoring Award
- 2015 USC Viterbi School of Engineering Junior Research Award
- 2013 Invited attendee, National Academy of Engineering Frontiers of Engineering Education Symposium
- 2012 Office of Naval Research Young Investigator Award
- Finalist: 2010 and 2011 NIH Director's New Innovator Award
- 2009 Invited attendee, National Academies Keck Futures Initiative Conference on Synthetic Biology
- 2008 Charles Lee Powell Foundation Research Award

Journal Publications

Cited ~4300 times. h-index: 38. i10-index: 66.

1. "Highly permeable and shelf-stable aquaporin biomimetic membrane based on an anodic aluminum oxide substrate." Tae-Joon Jeon, Ahmed Fuwad, Hyunil Ryo, Eui Don Han, Jun-Hee Lee, Noah Malmstadt, Young-Rok Kim, Young Ho Seo, and Sun Min Kim. *npj Clean Water*. In press. 2024.

2. "3D-printed microfluidic device for high-throughput production of lipid nanoparticles incorporating SARS-CoV-2 spike protein mRNA." Wan-Zhen Sophie Lin, W. Kristian Vu Bostic, and Noah Malmstadt. *Lab on a Chip.* **24**:162-170. 2024. 10.1039/D3LC00520H.

3. "A multistep, multicomponent extraction and separation microfluidic route to recycle water-miscible ionic liquid solvents." Bin Pan, Lanja Karadaghi, Richard Brutchey, and Noah Malmstadt. *Industrial & Engineering Chemistry Research*. **63**(1):489-497. 2024. 10.1021/acs.iecr.3c03312

4. "Photoactivable liposomes for controlled delivery: Recent progress and design Considerations." Seoyoon Song, Deborah Lee, Lucia C. Dalle Ore, Sungjun Kwak, Lifeng Kang, Hyung Kyo Kim, Noah Malmstadt, Sun Min Kim, and Tae-Joon Jeon. *Coordination Chemistry Reviews.* **501**:215567. 2023. 10.1016/j.ccr.2023.215567

5. "Elucidating the molecular interactions between lipids and lysozyme: evaporation resistance and bacterial barriers for dry eye disease." Deborah Lee, Seoyoon Song, Geonho Cho, Lucia C. Dalle Ore, Noah Malmstadt, Ahmed Fuwad, Sun Min Kim, and Tae-Joon Jeon. *Nano Letters*. **23**(20):9451-9460. 2023. 10.1021/acs.nanolett.3c02936

6. "A techno-economic approach to guide the selection of flow recyclable ionic liquids for nanoparticle synthesis." Lanja R. Karadaghi, Bin Pan, Frederick G. Baddour, Noah Malmstadt, and Richard L. Brutchey. *RSC Sustainability*. **1**:1861-1873. 2023. 10.1039/D3SU00182B

7. "Curvature preference of cubic $CsPbBr_3$ quantum dots embedded onto phospholipid bilayer membranes." Ricki Chairil and Noah Malmstadt. *Soft Matter*. **19**:3966-3974. 2023. 10.1039/d3sm00409k

8. "Purification of ionic liquid solvents in a self-optimizing, continuous microfluidic process via extraction of metal ions and phase separation." Bin Pan, Lanja R. Karadaghi, Richard L. Brutchey, and Noah Malmstadt. *ACS Sustainable Chemistry & Engineering*. **11**(1):228-237. 2023. 10.1021/acssuschemeng.2c05285

9. "Oxidation of membrane lipids alters the activity of the human serotonin 1A receptor." Ahmed Elbaradei, Zikai Wang, and Noah Malmstadt. *Langmuir*. **38**(22):6798-6807. 2022. 10.1021/acs.langmuir.1c03238

10. "Throughput optimization of molybdenum carbide nanoparticle catalysts in a continuous flow reactor using design of experiments." Lanja Karadaghi, Majed Madani, Emily Williamson, Anh To, Susan Habas, Frederick Baddour, Joshua Schaidle, Richard Brutchey, and Noah Malmstadt. *ACS Applied Nano Materials.* **5**(2):1966-1975. 2022. 10.1021/acsanm.1c02916

11. "Construction of model lipid membranes incorporating G-protein coupled receptors (GPCRs)." Ahmed Elbaradei, Lucia Caterina Dalle Ore, and Noah Malmstadt. *Journal of Visualized Experiments*. **180**:e62830. 2022.

12. "Compatibility of popular 3D-printed microfluidics materials with in-vitro enzymatic reactions." Wan-Zhen Sophie Lin, William E. Evenson, W. Kristian Bostic, Richard W. Roberts, and Noah Malmstadt. *ACS Applied Bio Materials*. **5**:818-824. 2022. 10.1021/acsabm.1c01180

13. "In-situ transfer vat photopolymerization for trans parent microfluidic device fabrication." Yang Xu, Fangjie Qi, Huachao Mao, Songwei Li, Yizhen Zhu, Jingwen Gong, Lu Wang, Noah Malmstadt, and Yong Chen. *Nature Communications.* **13**:918. 2022.

14. "Light-triggered unique shape transformations of giant polymersomes with tubular protrusions." Kaixuan Ren, Matthew C. Blosser, and Noah Malmstadt. *Macromolecular Rapid Communications.* **42**(22):2100474. 2021.

15. "An integrated microfluidic platform to fabricate single-micrometer asymmetric giant unilamellar vesicles (GUVs) using dielectrophoretic separation of microemulsions." Sepehr Maktabi, Noah Malmstadt, Jeffrey W. Schertzer, and Paul R. Chiarot. *Biomicrofluidics.* **15**(2):024112. 2021.

16. "Carbon dioxide transport across membranes." Marie Michenkova, Sara Taki, Matthew C. Blosser, Hyea J. Hwang, Thomas Kowatz, Fraser J. Moss, Rossana Occhipinti, Xue Qin, Soumyo Sen, Eric Shinn, Dengke Wang, Brian S. Zeise, Pan Zhao, Noah Malmstadt, Ardeschir Vahedi-Faridi, Emad Tajkhorshid, and Walter F. Boron. *Interface Focus*. **11**(2):20200090. 2021.

17. "Characterization of binding kinetics of $A_{2A}R$ to $G\alpha_s$ protein by surface plasmon resonance." Kirsten Koretz, Claire McGraw, Steven Stradley, Ahmed Elbaradei, Noah Malmstadt, and Anne Robinson. *Biophysical Journal.* **120**(9):1641-1649. 2021.

18. "Techno-economic analysis of recycled ionic liquid solvent used in a model colloidal platinum nanoparticle synthesis." Lanja Karadaghi, Noah Malmstadt, Kurt Van Allsburg, and Richard L. Brutchey. *ACS Sustainable Chemistry.* **9**(1):246-253. 2021. 10.1021/acssuschemeng.0c06993

19. "Effect of cholesterol on permeability of carbon dioxide across lipid membranes." Matthew C. Blosser, Majed S. Madani, and Noah Malmstadt. 10.1101/2020.11.16.384958. 2020.

20. "Enabling flow-based kinetic off-rate selections using a microfluidic enrichment device." William E. Evenson, Wan-Zhen Sophie Lin, Kenmond Pang, Alexander T. Czaja, Farzad Jalali-Yazdi, Terry T. Takahashi, Noah Malmstadt, and Richard W. Roberts. *Analytical Chemistry*. **92**(15)10218-10222. 2020. 10.1021/acs.analchem.0c01867

21. "Self-optimizing parallel millifluidic reactor for scaling nanoparticle synthesis." Lu Wang, Lanja Karadaghi, Richard L. Brutchey, and Noah Malmstadt. *Chemical Communications*. **56**:3745-3748. 2020.

22. "Effect of protein corona on nanoparticle-plasma membrane and nanoparticle-biomimetic membrane interactions." Lu Wang, Nicolas Hartel, Kaixuan Ren, Nicholas A. Graham, and Noah Malmstadt. *Environmental Science: Nano.* **7**:963-974. 2020. 10.1039/D0EN00035C

23. "An exceptionally mild and scalable solution-phase synthesis of molybdenum carbide nanoparticles for thermocatalytic CO_2 hydrogenation." Frederick G. Baddour, Emily J. Roberts, Anh T. To, Lu Wang, Susan E. Habas, Daniel A. Ruddy, Nicholas M. Bedford, Joshua Wright, Conner P. Nash, Joshua A. Schaidle, Richard L. Brutchey, and Noah Malmstadt. *Journal of the American Chemical Society.* **142**(2):1010-1019. 2020.

24. "Spectrophotometry in modular microfluidic architectures." Bryant Thompson, Krisna C. Bhargava, Alexander T. Czaja, Bin Pan, Brian T. Samuelsen, and Noah Malmstadt. *Biomicrofuidics*. **13**(6):064121. 2019.

25. "Continuous flow methods of fabricating catalytically active metal nanoparticles." Emily Roberts, Lanja Karadaghi, Lu Wang, Noah Malmstadt, and Richard Brutchey. *ACS Applied Materials & Interfaces.* **11**(31): 27479-27502. 2019.

26. "Liposome production and concurrent loading of drug simulants by microfluidic hydrodynamic focusing." Wan-Zhen Sophie Lin and Noah Malmstadt. *European Biophysics Journal*. **6**:549-558. 2019. 10.1007/s00249-019-01383-2

27. "The lipid phase preference of the adenosine A2A receptor depends on its ligand binding state." M. Gertrude Gutierrez, Jacob Deyell, Kate White, Lucia C. Dalle Ore, Vadim Cherazov, Raymond C. Stevens, and Noah Malmstadt. *Chemical Communications*. **55**:5724-5727. 2019.

28. "Biomimetic membranes as potential tools for water purification: Preceding and future avenues." Ahmed Fuwad, Hyunil Ryu, Noah Malmstadt, Sun Min Kim, and Tae-Joon Jeon. *Desalination*. **458**:97-115. 2019.

29. "Giant lipid vesicle formation using vapor-deposited charged porous polymers." Nareh Movsesian, Matthew Tittensor, Golnaz Dianat, Malancha Gupta, and Noah Malmstadt. *Langmuir*. **34**(30):9025–9035. 2018.

30. "Modular microfluidics for double emulsion formation." Bryant Thompson, Nareh Movsesian, Christine Cheng, Prathamesh Karandikar, Malancha Gupta, and Noah Malmstadt. *Methods in Cell Biology*. **148**:161-176. 2018.

31. "Effect of low levels of lipid oxidation on the curvature, dynamics, and permeability of lipid bilayers and their interactions with cationic nanoparticles." Noah Malmstadt and Hwankyu Lee. *Journal of Physics D: Applied Physics.* **50**:164002. 2018.

32. "Scale-up modeling for manufacturing nanoparticles using microfluidic T-junction." Yanqing Duanmu, Carson Riche, Malancha Gupta, Noah Malmstadt, and Qiang Huang. *IISE Transactions*. **50**(10):892-899. 2018. 10.1080/24725854.2018.1443529

33. "Photolithographic patterned surface forms size-controlled lipid vesicles." M. Gertrude Gutierrez, Shotaro Yoshida, Noah Malmstadt, and Shoji Takeuchi. *APL Bioengineering*. **2**:016104. 2018.

34. "Interactions between charged nanoparticles and giant vesicles fabricated from inverted-headgroup lipids." Lu Wang and Noah Malmstadt. *Journal of Physics D: Applied Physics*. **50**:415402. 2017. 10.1088/1361-6463/aa86e6

35. "Evaluation of dextran(ethylene glycol) hydrogen films for giant unilamellar vesicle production and their application for the encapsulation of polymersomes." Nestor Lopez Mora, Yue Gao, M. Gertrude Gutierrez, Justin Peruzzi, Ivan Bakker, Ruud J.R.W. Peters, Bianka Siewert, Sylvestre Bonnet, Roxanne E. Kieltykia, Jan C.M. van Hest, Noah Malmstadt, and Alexander Kros. *Soft Matter.* **13**:5580-5588. 2017.

36. "Continuous flow synthesis of Rh and RhAg alloy nanoparticle catalysts enables scalable production and improved morphological control." Pranaw Kunal, Emily J. Roberts, Carson T. Riche, Karalee Jarvis, Noah Malmstadt, Richard L. Brutchey, and Simon M. Humphrey. *Chemistry of Materials*. **29**(10):4341-4350. 2017. 10.1021/acs.chemmater.7b00694

37. "Modular, discrete micromixer elements fabricated by 3D printing." Krisna Bhargava, Roya Ermagan, Bryant Thompson, Andrew Friedman, and Noah Malmstadt. *Micromachines*. **8**(5):1-9. 2017.

38. "High-throughput continuous flow synthesis of nickel nanoparticles for the catalytic hydrodeoxygenation of guaiacol." Emily Roberts, Susan Habas, Lu Wang, Daniel Ruddy, Erick White, Frederick Baddour, Michael Griffin, Joshua Schaidle, Noah Malmstadt, and Richard L. Brutchey. *ACS Sustainable Chemistry & Engineering*. **5**:632-639. 2017.

39. "Dynamics of hydrogel-assisted giant unilamellar vesicle formation from unsaturated lipid systems." Justin Peruzzi, M. Gertrude Gutierrez, Kylee Mansfield, and Noah Malmstadt. *Langmuir*. **32**(40):12702-12709. 2016.

40. "G protein-coupled receptors incorporated into rehydrated diblock copolymer vesicles retain functionality." M. Gertrude Gutierrez, Farzad Jalali-Yazdi, Justin Peruzzi, Carson T. Riche, Richard W. Roberts, and Noah Malmstadt. *Small*. **12**(38):5256-5260. 2016.

41. "The functional activity of the human serotonin 5-HT_{1A} receptor is controlled by lipid bilayer composition." M. Gertrude Gutierrez, Kylee Mansfield, and Noah Malmstadt. *Biophysical Journal*. **110**(11):2486-2495. 2016.

42. "Engineered hydrophobilicity of discrete microfluidic elements for double emulsion generation." Bryant Thompson, Carson T. Riche, Nareh Mouvesesian, Krisna C. Bhargava, Malancha Gupta, and Noah Malmstadt. *Microfluidics and Nanofluidics*. **20**:78. 2016.

43. "Flexible opto-fluidic fluorescence sensors based on heterogeneously integrated micro-VCSELs and silicon photodiodes." Dongseok Kang, Boju Gai, Bryant Thompson, Sung-Min Lee, Noah Malmstadt, and Jongseung Yoon. *ACS Photonics*. **3**(6):912-918. 2016.

44. "Oxidation of membrane curvature-regulating phosphatidylethanolamine lipid results in formation of bilayer and cubic structures." Shalene Sankhagowit, Ernest Y. Lee, Gerard C.L. Wong, and Noah Malmstadt. *Langmuir*. **32**(10):2450-2457. 2016.

45. "Flow invariant droplet formation for stable parallel microreactors." Carson T. Riche, Emily J. Roberts, Malancha Gupta, Richard L. Brutchey, and Noah Malmstadt. *Nature Communications*. **7**:10780. 2016. 10.1038/ncomms10780

46. "Temperature sensing in modular microfluidic architectures." Krisna C. Bhargava, Bryant Thompson, Anoop Tembhekar, and Noah Malmstadt. *Micromachines*. **7**(1):11. 2016.

47. "Addition of cleaved tail fragments during lipid oxidation stabilizes membrane permeability behavior." Kristina A. Runas, Shiv J. Acharya, Jacob J. Schmidt, and Noah Malmstadt. *Langmuir*. **32**(3):779-786. 2016.

48. "Asymmetric giant lipid vesicle fabrication." Peichi C. Hu and Noah Malmstadt. *Methods in Molecular Biology* **1232**:79-90. 2015.

49. "Predicting the behavior of microfluidic circuits made from discrete elements." Krisna C. Bhargava, Bryant Thompson, Danish Iqbal, and Noah Malmstadt. *Scientific Reports*. **5**:15609. 2015.

50. "Membrane curvature-sensing and –inducing activity of islet amyloid polypeptide and its implications for membrane disruption." Natalie C. Kegulian, Shalene Sankhagowit, Melania Apostolidou, Sajith A. Jayashinghe, Noah Malmstadt, Peter C. Butler, and Ralf Langen. *Journal of Biological Chemistry*. **290**(43):25782-25793. 2015.

51. "Viscoelasetic deformation of lipid bilayer vesicles." Shao-Hua Wu, Shalene Sankhagowit, Roshni Biswas, Shuyang Wu, Michelle L. Povinelli, and Noah Malmstadt. *Soft Matter*. **11**:7385-7391. 2015.

52. "Glucose transport machinery reconstituted in cell models." Jesper S. Hansen, Karin Elbing, James R. Thompson, Noah Malmstadt, and Karin Lindkvist-Petersson. *Chemical Communications*. **51**(12):2316-2319. 2015.

53. "Low levels of oxidation radically increase the passive permeability of lipid bilayers." Kristina Runas and Noah Malmstadt. *Soft Matter.* **11**(3):499-505. 2015.

54. "Discrete elements for 3D microfluidics." Krisna C. Bhargava, Bryant Thompson, and Noah Malmstadt. *Proceedings of the National Academy of Sciences of the United States of America.* **111**(42):15013-15018. 2014. 10.1073/pnas.141476411

55. "Human serotonin receptor 5-HT_{1A} preferentially segregates to the liquid disordered phase in synthetic lipid bilayers." M. Gertrude Gutierrez and Noah Malmstadt. *Journal of the American Chemical Society*. **136**(39):13530-13533. 2014.

56. "The dynamics of giant unilamellar vesicle oxidation probed by morphological transitions." Shalene Sankhagowit, Shao-Hua Wu, Roshni Biswas, Carson T. Riche, Michelle L. Povinelli, and Noah Malmstadt. *Biochimica et Biophysica Acta – Biomembranes.* **1838**(10):2615-2624. 2014.

57. "Fluoropolymer surface coatings to control droplets in microfluidic devices." Carson T. Riche, Chuchu Zhang, Malancha Gupta, and Noah Malmstadt. *Lab on a Chip.* **14**(11):1834-1841. 2014.

58. "Preparation of size tunable giant vesicles for cross-linked dextran(ethylene glycol) hydrogels." Néstor López Mora, Jesper S. Hansen, Yue Gao, Andrew A. Ronald, Roxanne Kieltyka, Noah Malmstadt, and Alexander Kros. *Chemical Communications*. **50**:1953-1955. 2014.

59. "Lipid directed intrinsic membrane protein segregation." Jesper S. Hansen, James R. Thompson, Claus Hélix-Nielsen, and Noah Malmstadt. *Journal of the American Chemical Society*. **135**(46):17294-17297. 2013. 10.1021/ja409708e

60. "Liposomes with double-stranded DNA anchoring the bilayer to a hydrogel core." Yasaman Dayani and Noah Malmstadt. *Biomacromolecules*. **14**(10):3380-3385. 2013.

61. "Automated formation of multicomponent-encapsulating vesosomes using continuous flow microcentrifugation." Huisoo Jang, Peichi C. Hu, Sung Ho Jung, Won Young Kim, Sun Min Kim, Noah Malmstadt, and Tae-Joon Jeon. *Biotechnology Journal*. **8**(11):1341-1346. 2013.

62. "Optical stretching as a tool to investigate the mechanical properties of lipid bilayers." Mehmet E. Solmaz, Shalene Sankhagowit, Roshni Biswas, Camilo A. Mejia, Michelle L. Povinelli, and Noah Malmstadt. *RSC Advances*. 3(37):16632-16638. 2013.

63. "Cholesterol translocation in a phospholipid membrane." Amit Choubey, Rajiv. K. Kalia, Noah Malmstadt, Aiichiro Nakano, and Priya Vashishta. *Biophysical Journal*. **104**(11):2429-2436. 2013.

64. "Deformation and poration of lipid bilayer membranes by charged nanoparticles." Su Li and Noah Malmstadt. *Soft Matter.* **9**(20):4969-4976. 2013. 10.1039/C3SM27578G

65. "Effect of ionic liquid impurities on the synthesis of silver nanoparticles." Laura Lazarus, Carson T. Riche, Noah Malmstadt, and Richard Brutchey. *Langmuir*. **28**(45):15987-15993. 2012.

66. "Optical stretching of giant unilamellar vesicles with an integrated dual-beam optical trap." Mehmet E. Solmaz, Roshni Biswas, Shalene Sankhagowit, James R. Thompson, Camilo A. Mejia, Noah Malmstadt, and Michelle L. Povinelli. *Biomedical Optics Express*. **3**(10):2419-2427. 2012.

67. "Lipid bilayers covalently anchored to carbon nanotubes." Yasaman Dayani and Noah Malmstadt. *Langmuir.* **28**(21):8174-8182. 2012.

68. "Two-phase microfluidic droplet flows of ionic liquids for the synthesis of gold and silver nanoparticles." Laura L. Lazarus, Carson T. Riche, Brandon C. Marin, Malancha Gupta, Noah Malmstadt, and Richard L. Brutchey. *ACS Applied Materials and Interfaces*. **4**(6):3077-3083. 2012.

69. "Vapor deposition of cross-linked fluoropolymer barrier coatings onto pre-assembled microfluidic devices." Carson T. Riche, Brandon C. Marin, Noah Malmstadt, and Malancha Gupta. *Lab on a Chip*. **11**(18):3049-3052. 2011.

70. "Imaging molecular transport across lipid bilayers." Su Li, Peichi Hu, and Noah Malmstadt. *Biophysical Journal*. **101**(3):700-708. 2011.

71. "Microfluidic fabrication of asymmetric giant lipid vesicles." Peichi Hu, Su Li, and Noah Malmstadt. *ACS Applied Materials and Interfaces.* **3**(5):1434-1440. 2011.

72. "Excitation of Cy5 in self-assembled lipid bilayers using optical microresonators." Lindsay M. Freeman, Yasaman Dayani, Su Li, Hong-Seok Choi, Noah Malmstadt, and Andrea M. Armani. *Applied Physics Letters.* **98**:143703. 2011.

73. "Flow-focused synthesis of monodisperse gold nanoparticles using ionic liquids on a microfluidic platform." Laura L. Lazarus, Astro S.-J. Yang, Steven Chu, Richard L. Brutchey, and Noah Malmstadt. *Lab on a Chip*. **10**(24):3377-3379. 2010.

74. "Confocal imaging to quantify passive transport across biomimetic lipid membranes." Su Li, Peichi Hu, and Noah Malmstadt. *Analytical Chemistry*. **82**(18):7766-7771. 2010.

75. "Mechanisms of alveolar epithelial translocation of a defined population of nanoparticles." Nazanin R. Yacobi, Noah Malmstadt, Farnoosh Fazlollahi, Lucas DeMaio, Ronald Marchelletta, Sarah F. Hamm-Alvarez, Zea Borok, Kwang-Jin Kim, and Edward D. Crandall. *American Journal of Respiratory Cell and Molecular Biology*. **42**(5):604-614. 2010.

76. "Black lipid membranes stabilized through substrate conjugation to a hydrogel." Tae-Joon Jeon*, Noah Malmstadt*, Jason L. Poulos, and Jacob J. Schmidt. *Biointerphases*. **3**(2):FA96-FA100. 2008. *Joint Primary Authors

77. "Long-lived planar lipid bilayer membranes anchored to an *in situ* polymerized hydrogel." Noah Malmstadt, Tae-Joon Jeon, and Jacob J. Schmidt. *Advanced Materials*. **20**(1):84-89. 2008.

78. "Automated formation of lipid bilayer membranes in a microfluidic device." Noah Malmstadt, Michael A. Nash, Robert F. Purnell, and Jacob J. Schmidt. *Nano Letters.* **6**(9):1961-1965. 2006.

79. "Hydrogel-encapsulated lipid membranes." Tae-Joon Jeon, Noah Malmstadt, and Jacob J. Schmidt. *Journal of the American Chemical Society.* **128**(1):42-43. 2006.

80. "'Smart' mobile affinity matrix for a heterogeneous microfluidic immunoassay." Noah Malmstadt, Allan S. Hoffman, and Patrick S. Stayton. *Lab on a Chip.* **4**(4):412-415. 2004.

81. "A smart microfluidic affinity chromatography matrix composed of poly(*N*-isopropylacrylamide)-coated beads." Noah Malmstadt, Paul Yager, Allan S. Hoffman, and Patrick S. Stayton. *Analytical Chemistry.* **75**(13):2943-2949. 2003. (Accelerated article)

82. "Affinity thermoprecipitation and recovery of biotinylated biomolecules via a mutant streptavidin-smart polymer conjugate." Noah Malmstadt, David E. Hyre, Zhongli Ding, Allan S. Hoffman, and Patrick S. Stayton. *Bioconjugate Chemistry.* **14**(3):575-580. 2003.

83. "Molecular basis for asymmetrical growth in two-dimensional streptavidin crystals." Todd C. Edwards*, Noah Malmstadt*, Sandy Koppenol, Masahiko Hara, Viola Vogel, and Patrick S. Stayton. *Langmuir.* **18**(20):7447-7451. 2002. *Joint Primary Authors

84. "Kinetics and mechanism of pentachlorophenol degradation by sonication, ozonation, and sonolytic ozonation." Linda K. Weavers, Noah Malmstadt, and Michael R. Hoffmann. *Environmental Science & Technology.* **34**(7):1280-1285. 2000.

Book Chapters

1. "Transitioning rationally designed catalytic materials to real 'working' catalysts produced at commercial scale: Supported metal nanoparticles." Joshua A. Schaidle, Susan E. Habas, Frederick G. Baddour, Carrie A. Farberow, Danial A. Ruddy, Jesse E. Hensley, Richard L. Brutchey, Noah Malmstadt, and Heinz Robota. In *Specialist Periodic Report – Catalysis Vol. 29*. Ed. James Spivey and Yi-Fan Han. Royal Society of Chemistry: London. 213-281. 2017.
2. "Measuring lipid bilayer permeability with biomimetic membranes." Kristina Runas and Noah Malmstadt. In *Carbon Nanomaterials for Biomedical Applications*. Ed. Mei Zhang, Rajesh Naik, and Liming Dai. Springer: New York. 501-532. 2016.
3. "Micro and nanoscale smart polymer technologies in biomedicine." Samarth Kulkarni, Noah Malmstadt, Allan S. Hoffman, and Patrick S. Stayton. In *Therapeutic Micro/Nano Technology*. Ed. Tejal Desai and Sangeeta Bhatia. Springer: New York. 289-304. 2006.

Conference Proceedings

1. "Lipid bilayer membrane formation by solvent extraction in a microfluidic channel." Noah Malmstadt, Michael A. Nash, Robert F. Purnell, and Jacob J. Schmidt. *Micro Total Analysis Systems 2006: Proceedings of μTAS 2006 Conference.* 1366-1368. 2006.
2. "New Approaches to lipid bilayer fabrication: Microfluidic solvent extraction and hydrogel encapsulation." Noah Malmstadt, Tae-Joon Jeon, Michael A. Nash, Robert Purnell, and Jacob J. Schmidt. *Advances in Science and Technology (Proceedings of the International Ceramics Congress and Forum on New Materials).* **53**:22-31. 2006.
3. "Mechanical studies of hydrogel encapsulated membranes" Tae-Joon Jeon, Noah Malmstadt, and Jacob Schmidt. *Materials Research Society Symposium Proceedings.* **926**:0926-CC04-03. 2006.

Invited Presentations

1. "Design principles for 3D-printed microfluidics in manufacturing processes." SelectBIO Lab-on-a-chip & Microfluidics World Congress. Laguna Hills, CA. November 29, 2023.
2. "Sustainable and scalable flow synthesis of catalytic colloidal nanocrystals." Flow Chemistry Asia. Tokyo, Japan. October 6, 2023.
3. "Modular design of 3D printed microfluidics for bioprocess applications." SelectBIO Lab-on-a-Chip & Microfluidics Europe. Rotterdam, Netherlands. June 19, 2023.
4. "Modular design of 3D printed microfluidics for bioprocess applications." Select Biosciences Innovations in Microfluidics. Seattle, WA. May 4, 2023.
5. "Intelligent recycling of sustainable solvents for catalyst manufacturing." Presented at the 265th National Meeting of the American Chemical Society. Indianapolis, IN. March 26, 2023.
6. "Rapid manufacturing of mRNA lipid nanoparticles in a 3D printed microfluidic device." Select Biosciences Lab-on-a-Chip and Microfluidics World Congress. Long Beach, CA. December 13, 2022.
7. "Scaling up the microfluidic synthesis of catalytic nanoparticles." University of Arizona Chemical Engineering Departmental Seminar. Tucson, AZ. September 26, 2022.
8. "Effects of lipid oxidation on functional bilayer properties: Changes in mechanics, permeability, and protein activity." Presented at the 263rd National Meeting of the American Chemical Society. Held online. March 22, 2022.
9. "Biochemical compatibility of stereolithographic resins." Select Biosciences Organoids and Organs on a Chip 2021. San Diego, CA. December 15, 2021.
10. "Modular microfluidics." μTAS 2021 Workshop on 3D-Printed Microfluidics. Held online. October 10, 2021.
11. "Designing a bioreagent-compatible material for a 3D-printed molecular design system." Select Biosciences Lab on a Chip and Microfluidics 2021. Held online. June 28, 2021.
12. "High throughput millifluidic reactors towards parallelized synthesis of catalytic nanoparticles." Presented at the 261st National Meeting of the American Chemical Society. Held online. April 8, 2021.
13. "Measuring the CO_2 permeabilities of lipid bilayers as a function of cholesterol concentration in a continuous flow microfluidic mixture." Presented at the 261st National Meeting of the American Chemical Society. Held online. April 8, 2021.

14. "Designing a bioreagent-compatible material for a 3D-printed molecular design system." Select Biosciences 3D Bioprinting 2021. Held online. March 19, 2021.
15. "Active reconstitution of membrane proteins in giant lipid vesicles: Towards artificial cell." UC Merced Bioengineering Seminar Series. Held online. February 26, 2021.
16. "A target-directed reagent pipeline via microfluidic mRNA display." Presented at the NCI IMAT 2020 PI meeting. Held online. December 3, 2020.
17. "Building nanoparticles for a carbon-neutral world." The Dixie Forum, Dixie State University. Held online. November 3, 2020.
18. "How oxidation changes cell membrane function: Distortion of mechanics, permeability, and protein activity." Lehigh University Chemistry Seminar Series. Held Online. September 22, 2020.
19. "Connecting lipid oxidation to cellular dysfunction in hyperbaric oxygen toxicity." Presented at the 2020 Office of Naval Research Undersea Medicine Program Review Series. Held Online. October 5, 2020.
20. "Nanoplastic interactions with biomembranes: Effects of surface charge and protein corona passivation." Presented at the 259th National Meeting of the American Chemical Society. Held online. March 23, 2020.
21. "A target-directed reagent pipeline via microfluidic mRNA display." Presented at the NCI IMAT 2019 PI meeting. Los Angeles, CA. November 22, 2019.
22. "3D-printed microfluidics for automation of large-library molecular selection against cancer targets." Presented at Select Biosciences Lab-on-a-Chip & Microfluidics World Congress. San Diego, CA. October 8, 2019.
23. "Modular 3D printed microfluidic systems: design with manufacturability in mind." Presented at Select Biosciences Biofabrication & Biomanufacturing Europe. Rotterdam, Netherlands. June 21, 2019.
24. "3D-printed microfluidics for automation of large-library molecular selection against cancer targets." Presented at Select Biosciences Lab-on-a-Chip & Microfluidics Europe. Rotterdam, Netherlands. June 19, 2019.
25. "Connecting lipid oxidation to cellular dysfunction in hyperbaric oxygen toxicity." Presented at the ONR Undersea Medicine and NAVSEA Deep Submergence Biomedical Development Program Review. Durham, NC. May 14, 2019.
26. "Consequences of oxidation of plasma membrane lipids." Presented at the 257th National Meeting of the American Chemical Society. Orlando, FL. April 1, 2019.
27. "Consequences of lipid oxidation on bilayer morphology and membrane protein function." Presented at the 3rd Strasbourg Workshop on Membrane Biophysics: The Future of Lipid Oxidation. Strasbourg, France. Dec. 3, 2018.
28. "Flow synthesis: An improved path to market for nanoparticle catalysts." Presented at the National Meeting of the American Institute of Chemical Engineers. Pittburgh, PA. Oct. 30, 2018.
29. "Modular microfluidics for automating biochemical workflows." Presented at Select Biosciences Lab on a Chip and Microfluidics World Congress. San Diego, CA. October 2, 2018.

30. "Connecting lipid oxidation to cellular dysfunction in hyperbaric oxygen toxicity." Presented at ONR Undersea Medicine Program Review. Arlington, VA. June 14, 2018.
31. "Modular 3D printed microfluidic systems: Design with manufacturability in mind." Presented at Select Biosciences Bioprinting and 3D-Printing in the Life Sciences Europe. Rotterdam, Netherlands. June 8, 2018.
32. "3D-printed microfluidic systems built from functional modular elements." Presented at Select Biosciences Lab-on-a-chip Europe. Rotterdam, Netherlands. June 6, 2018.
33. "Active reconstitution of membrane proteins in giant lipid vesicles: Towards artificial cells." Presented at the Rowan University Department of Bioengineering Seminar series. Glassboro, NJ. April 6, 2018.
34. "Constructing microfluidic analytical systems from 3D-printed blocks with integrated functional components." Presented at Select Biosciences BioEngineering 2018. Boston, MA. March 26, 2018.
35. "Adenosine 2A receptor phase segregation behavior depends on its ligand binding state." Presented at the 255th National Meeting of the American Chemical Society. New Orleans, LA. March 19, 2018.
36. "Using synthetic biomembranes to determine how receptor protein function depends on lipid composition." Keynote address presented at annual meeting of the Korean Society for Biotechnology and Bioengineering. Busan, South Korea. Oct. 12, 2017.
37. "Constructing microfluidic analytical systems from 3D-printed blocks with integrated functional components." Presented at the Lab-on-a-chip, Microfluidics, and Microarrays World Congress. San Diego, CA. Oct. 3, 2017.
38. "3D modular microfluidics for integrated bioanalytic workflows." Presented at the Gordon Research Conference on the Physics and Chemistry of Microfluidics. Lucca, Italy. June 4, 2017.
39. "Connecting lipid oxidation to cellular dysfunction in hyperbaric oxygen toxicity." Presented at the Office of Naval Research Undersea Medicine Program Review. San Diego, CA. May 2, 2017.
40. "Hydrogel-assisted membrane protein reconstitution for studying GPCR dependence on lipid composition." Presented at the 253rd National Meeting of the American Chemical Society. San Francisco, CA. April 3, 2017.
41. "Modular microfluidics for high-throughput automated biomarker quantification." Presented at the Biomarker Summit 2017. San Diego, CA. March 20, 2017.
42. "Synthetic biomimetic cell membranes for studying the lipid compositional dependence of G protein-coupled receptors." Presented at the Tulane Brain Institute Seminar Series. New Orleans, LA. November 2, 2016.
43. "Bioanalytical applications of modular 3D microfluidic systems." Presented at the Lab-on-a-chip, Microfluidics, and Microarrays World Congress. San Diego, CA. September 27, 2016.
44. "Hydrogel swelling for membrane protein reconstitution in lipid and polymer giant vesicles." Presented at Biomembrane Days. Berlin, Germany. September 6, 2016.
45. "Effects of nanoparticle interactions and lipid oxidation on lipid bilayer morphology." Seminar presented at the Max Plank Institute for Colloids and Interfaces. Potsdam, Germany. September 2, 2016.

46. "Transient response of lipid bilayer vesicles to an applied step stress in an optical trap." MechBio Symposium: Putting Together the Cell Mechanome. La Jolla, CA. August 4, 2016.
47. "Consequences of lipid oxidation on bilayer structural and mechanical properties." Presented at the 251st National Meeting of the American Chemical Society. San Diego, CA. March 14, 2016.
48. "Viscoelastic deformation of lipid vesicles." Presented at Multiscale Methods and Validation in Medicine and Biology III. Los Angeles, CA. February 25, 2016.
49. "Designing modular 3D microfluidic circuits." Presented at the Lab-on-a-chip, Microfluidics, and Microarrays World Congress. San Diego, CA. September 28, 2015.
50. "Molecular origins of cell membrane damage in hyperbaric oxygen toxicity." Presented at the 2015 Office of Naval Research Undersea Medicine program review. Buffalo, NY. August 6, 2015.
51. "Interfacial engineering in biomembranes and microflows." Presented as the UCLA Bioengineering Departmental Seminar. Los Angeles, CA. April 16, 2015.
52. "Functional reconstitution of integral membrane proteins in giant lipid vesicles by hydrogel swelling." Presented at the 249th National Meeting of the American Chemical Society. Denver, CO. March 23, 2015.
53. "Interfacial engineering in biomembranes and microflows." Presented as the USC Chemistry Department Seminar. Los Angeles, CA. December 9, 2014.
54. "Molecular origins of cell membrane damage in hyperbaric oxygen toxicity." Presented at the 2014 Office of Naval Research Undersea Medicine program review. Durham, NC. July 15, 2014.
55. "Photooxidation-induced morphological deformation of lipid bilayers: Kinetics of surface area changes." Presented at the 247th National Meeting of the American Chemical Society. Dallas, TX. March 19, 2014.
56. "Integrating modular chemical engineering projects across the curriculum." Presented at the Interdisciplinary Engineering Design Education Conference. San Jose, CA. March 3, 2014.
57. "Bottom-up synthetic biology with lipid bilayer membranes." Presented at the Frontiers of Chemical Engineering Symposium, Hong Kong University of Science and Technology, December 9, 2013.
58. "Green chemistry for metal nanocrystal fabrication." Presented at the Energy Materials Nanotechnology Spring Meeting. Orlando, FL. April 10, 2013.
59. "Optical stretching of lipid vesicles to characterize bilayer membrane mechanics." Presented at the 245th National Meeting of the American Chemical Society. New Orleans, LA. April 8, 2013.
60. "Model systems for probing composition/property relationships in cell membranes." Presented as the UCLA Bioengineering Departmental Seminar. Los Angleles, CA. November 29, 2012.
61. "Hybrid material systems for controlling lipid bilayer assembly." Presented at the European Materials Research Society Spring Meeting. Strasbourg, France. May 15, 2012.
62. "Lipid bilayer deformation by nanoparticles and optical fields." Presented at the 243rd National Meeting of the American Chemical Society. San Diego, CA. March 26, 2012.

63. "Characterizing passive lipid membrane transport with artificial cells." Presented at the Colloquium of the USC Physics and Astronomy Department. Los Angeles, CA. November 8, 2010.

64. "Measuring transport into artificial cells with confocal microscopy." Presented at the 2010 Symposium of the Southern California Society for Microscopy and Microanalysis. Pasadena, CA. March 11, 2010.

Selected Contributed Oral Presentations

(* indicates presenting author)

1. "Investigating biomembrane-nanoparticle interactions with giant vesicles fabricated from inverted-headgroup lipids." Lu Wang* and Noah Malmstadt. Presented at the 2016 National Meeting of the American Institute of Chemical Engineers. November 17, 2016.

2. "Elucidating GPCR functional dependence on plasma membrane composition using giant unilamellar protein-vesicles." M. Gertrude Gutierrez* and Noah Malmstadt. Presented at the 2016 Annual Meeting of the Biophysical Society. February 29, 2016.

3. "Nanomaterial manufacturing via highly parallelized microfluidic network." Carson T. Riche*, Emily Roberts, Malancha Gupta, Richard Brutchey and Noah Malmstadt. Presented at the 2015 National Meeting of the American Institute of Chemical Engineers. November 11, 2015.

4. "Droplet formation in flow invariant geometry for parallel processing." Carson T. Riche*, Malancha Gupta, and Noah Malmstadt. Presented at the 2015 National Meeting of the American Institute of Chemical Engineers. November 12, 2015.

5. "Stable hydrogel-anchored liposomes with double-stranded DNA linkers." Yasaman Dayani* and Noah Malmstadt. Presented at the 2013 National Meeting of the American Institute of Chemical Engineers. November 4, 2013.

6. "Measuring lipid bilayer bending energy in a dual-beam optical trap." Noah Malmstadt*. Presented at the 2013 Annual Meeting of the Biophysical Society. February 2, 2013.

7. "Lipid bilayer membrane deformation and poration induced by synthetic nanoparticles." Noah Malmstadt* and Su Li. Presented at the 2012 National Meeting of the Biomedical Engineering Society. November 15, 2012.

8. "Ionic-liquid based droplet microreactors." Noah Malmstadt*. Presented at the 2012 National Meeting of the American Institute of Chemical Engineers. October 30, 2012.

9. "Mechanical deformation of synthetic cell membranes by nanoparticle interactions." Noah Malmstadt* and Su Li. Presented at the International Conference on Bioengineering and Nanotechnology. June 25, 2012.

10. "Microfluidic synthesis of monodisperse metal nanoparticles using a room temperature ionic liquid solvent." Carson T. Riche*, Laura Lazarus, Richard Brutchey, Malancha Gupta, and Noah Malmstadt. Presented at the 243rd American Chemical Society National Meeting. March 28, 2012.

11. "Hybrid material systems for controlling lipid bilayer assembly." Noah Malmstadt*, Yasaman Dayani, Peichi Hu, and Su Li. Presented at the 2011 National Meeting of the American Institute of Chemical Engineers. October 19, 2011.

12. "Vapor-phase polymerization to modify the surfaces of pre-assembled microfluidic channels." Carson Riche*, Noah Malmstadt, and Malancha Gupta. Presented at the 2011 National Meeting of the American Institute of Chemical Engineers. October 18, 2011.
13. "Confocal imaging to quantify carboxylic acid passive transport across lipid membranes." Su Li*, Peichi Hu, and Noah Malmstadt. Presented at the 241st American Chemical Society National Meeting. March 30, 2011.
14. "Flow-focused synthesis of monodisperse metal nanoparticles using ionic liquids on a microfluidic platform." Laura L. Lazarus*, Shih-Ju Yang, Steven Chu, Richard L. Brutchey, and Noah Malmstadt. Presented at the 241st American Chemical Society National Meeting. March 29, 2011.
15. "Characterizing passive transport across biomimetic cell membranes with confocal microscopy." Noah Malmstadt* and Su Li. Presented at the 241st American Chemical Society National Meeting. March 27, 2011.
16. "Confocal imaging to quantify passive drug transport across biomimetic lipid membranes." Su Li*, Peichi Hu, and Noah Malmstadt. Presented at the 2010 National Meeting of the American Institute of Chemical Engineers. November 11, 2010.
17. "Engineering asymmetric lipid bilayers in giant vesicles." Noah Malmstadt* and Peichi Hu. Presented at the 2009 National Meeting of the American Institute of Chemical Engineers. November 13, 2009.
18. "Engineered microfluidic mixing for green nanocrystal fabrication." Noah Malmstadt*, Shih-Ju Yang, and Peichi Hu. Presented at the 2009 National Meeting of the American Institute of Chemical Engineers. November 9, 2009.
19. "Controlled layer-by-layer assembly of asymmetric giant lipid vesicles." Noah Malmstadt* and Peichi Hu. Presented at the 238th American Chemical Society National Meeting. August 18, 2009.
20. "Lipid raft formation in bilayer membranes with biomimetic cytoskeletons." Noah Malmstadt*. Presented at the 100th Annual Meeting of the American Institute of Chemical Engineers. November 21, 2008.
21. "Lipid bilayer membrane fabrication by solvent extraction in a microfluidic channel." Noah Malmstadt*, Michael Nash, and Jacob J. Schmidt. Presented at the Society for Biological Engineering's 2nd Annual International Conference on Bioengineering and Nanotechnology. September 5, 2006.
22. "Planar lipid bilayer fabrication by solvent extraction in a microfluidic channel." Noah Malmstadt*, Michael Nash, and Jacob J. Schmidt. Presented at the 231st American Chemical Society National Meeting. March 27, 2006.

Selected Contributed Poster Presentations

(* indicates presenting author)

1. "G protein-coupled receptors incorporated into rehydrated diblock copolymer vesicles retain functionality." M. Gertrude Gutierrez*, Farzad Jalali-Yazdi, Justin Peruzzi, Carson T. Riche, Richard W. Roberts, and Noah Malmstadt. Presented at the Biophysical Society Thematic Meeting: Liposomes, Exosomes, and Virosomes: From Modeling Complex Membrane Processes to Medical Diagnostics and Drug Delivery. September 12, 2016.

2. "Nanoparticle interactions with giant vesicles fabricated from inverted-headgroup lipids." Lu Wang* and Noah Malmstadt. Presented at the Annual Meeting of the Biophysical Society. February 29, 2016.

3. "Kinetic study of photo-induced lipid oxidation in giant unilamellar vesicles." Shalene Sankhagowith* and Noah Malmstadt. Presented at the 2014 Annual Meeting of the Biophysical Society. February 18, 2014.

4. "Morphological changes of giant vesicles due to phototoxicity." Shalene Sankhagowit* and Noah Malmstadt. Presented at the 243rd American Chemical Society National Meeting. March 26, 2012.

5. "Microcapillary microfluidic fabrication of asymmetric giant lipid vesicles with minimal organic solvent." Peichi C. Hu* and Noah Malmstadt. Presented at the 243rd American Chemical Society National Meeting. March 26. 2012.

6. "Lipid-based hybrid nanostructures mimicking biological membranes." Yasaman Dayani* and Noah Malmstadt. Presented at the 243rd American Chemical Society National Meeting. March 26, 2012.

7. "Imaging molecular transport across lipid bilayers." Su Li*, Peichi C. Hu, and Noah Malmstadt. Presented at the 56th Annual Meeting of the Biophysical Society. February 29, 2012.

8. "Formation of covalently anchored lipid bilayers on multi-walled carbon nanotubes." Yasaman Dayani* and Noah Malmstadt. Presented at the 3rd International Conference from Nanoparticles and Nanomaterials to Nanodevices and Nanosystems (IC4N). June 26-29, 2011.

9. "Fluorinated coating for PDMS microfluidic devices." Carson Riche*, Brandon Marin, Laura L. Lazarus, Richard L. Brutchey, Malancha Gupta, and Noah Malmstadt. Presented at the 2011 Gordon Research Conference on the Physics and Chemistry of Microfluidics. June 25-26, 2011.

10. "Microfluidic fabrication of asymmetric giant unilamellar vesicles." Peichi Hu* and Noah Malmstadt. Presented at the 241st American Chemical Society National Meeting. March 29, 2011.

11. "Formation of lipid bilayers on covalently modified multi-walled carbon nanotubes." Yasaman Dayani* and Noah Malmstadt. Presented at the 241st American Chemical Society National Meeting. March 28, 2011.

12. "Effects of surface chemistry on ionic liquid droplet formation in a microfluidic device for reaction synthesis." Carson Riche*, Noah Malmstadt, and Malancha Gupta. Presented at the 241st American Chemical Society National Meeting. March 28, 2011.

13. "Microfluidic fabrication of asymmetric giant lipid vesicles." Peichi Hu* and Noah Malmstadt. Presented at the 55th Annual Meeting of the Biophysical Society. March 2011.

14. "Engineered microfluidic mixing for green nanocrystal manufacturing." Richard Brutchey and Noah Malmstadt*. Presented at the 2011 NSF Engineering Research and Innovation Conference. January 2011.

15. "Measuring passive transport using confocal microscopy of giant lipid vesicles." Su Li* and Noah Malmstadt. Presented at the 54th Annual Meeting of the Biophysical Society. February 2010.

16. "Asymmetric giant unilamellar vesicles." Peichi Hu* and Noah Malmstadt. Presented at the 54th Annual Meeting of the Biophysical Society. February 2010.

17. "Fabricating a stabilized lipid-based platform for presenting and handling GPCRs." Yasaman Dayani* and Noah Malmstadt. Presented at the 54th Annual Meeting of the Biophysical Society. February 2010.

18. "Biomimetic phase interfaces and artificial cells." Noah Malmstadt. Presented at *Illuminating the Genetic Architecture of Common Eye Disease* Conference. February 2009.

19. "Asymmetric vesicles as synthetic cell membranes." Presented at the 2009 National Academies Keck Futures Initiative conference on Synthetic Biology: Building on Nature's Inspiration. University of California at Irvine. November 21, 2009.

20. "Lipid bilayer membrane formation by solvent extraction in a microfluidic channel." Noah Malmstadt*, Michael A. Nash, Robert F. Purnell, and Jacob J. Schmidt. Presented at the 10th International Conference on Miniaturized Systems for Chemistry and Life Sciences (*μTAS 2006*). November 2006.

21. "Microfluidic lipid bilayer membrane fabrication by solvent extraction: An automated platform for ion channel studies." Noah Malmstadt*, Michael A. Nash, Robert F. Purnell, and Jacob J. Schmidt. Presented at 2006 University of California System-wide Bioengineering Symposium. June 2006.

22. "Microfluidic lipid membrane fabrication for studies of protein nanopores." Noah Malmstadt* and Jacob J. Schmidt. Presented at the California Nanosystems Institute's 2nd Annual *Frontiers in Nanosystems* Conference. February 2006.

23. "Stabilization of protein nanopores by hydrogel encapsulation of lipid membranes." Noah Malmstadt*, Tae-Joon Jeon, and Jacob J. Schmidt. Presented at the California Nanosystems Institute's 2nd Annual *Frontiers in Nanosystems* Conference. February 2006.

24. "Lipid bilayer membrane fabrication by solvent extraction in a PDMS microfluidic channel." Noah Malmstadt* and Jacob J. Schmidt. Presented at the Gordon Research Conference on the Physics and Chemistry of Microfluidics. August 2005.

25. "Temperature-dependant smart bead adhesion: A versatile platform for biomolecular immobilization in microfluidic devices." Noah Malmstadt*, Allan S. Hoffman, and Patrick S. Stayton. Presented at the Gordon Research Conference on the Physics and Chemistry of Microfluidics. August 2003.

26. "Microfluidic affinity chromatography using a temperature-responsive smart polymer matrix." Noah Malmstadt*, Allan S. Hoffman, and Patrick S. Stayton. Presented at *LabAutomation 2003*. February 2003.

27. "Microfluidic affinity chromatography using a temperature-responsive smart polymer matrix." Noah Malmstadt*, Allan S. Hoffman, and Patrick S. Stayton. Presented at *Gels, genes, grafts & giants: Transitioning biomaterials into the 21st century, A symposium in honor of the 70th birthday of Professor Allan S. Hoffman*. December 2002.

Patents

A 3D-Printed Microfluidic Device for Production Of Lipid Nanoparticles Sophie Wan-Zhen Lin, William Kristian Vu Bostic, and Noah Malmstadt	Patent Application 63/409,321 Filed Sept. 18, 2023
G protein-coupled receptors incorporated into rehydrated polymer vesicles retain functionality M. Gertrude Gutierrez, Carson Riche, and Noah Malmstadt	Provisional Patent Application 64/271,255 Filed Dec 27, 2016
Discrete elements for 3D microfluidics Krisna C. Bhargava, Bryant Thompson, and Noah Malmstadt	U.S. Patent Application 14/735,941 Filed June 10, 2015
Solvent-resistant barrier films coated from the vapor phase onto sealed microfluidic channels Noah Malmstadt, Malancha Gupta, Carson Riche, and Brandon Marin	U.S. Patent Application 13/951,990 Filed July 26, 2013
Continuous flow synthesis of nanomaterials using ionic liquids in microfluidic reactors Richard Brutchey, Noah Malmstadt, Laura Lazarus, Astro S.-J. Yang, Carson Riche, Steven Chu, and Brandon Marin	U.S. Patent Application 13/647,242 Filed Oct. 8, 2012
Formation and encapsulation of molecular bilayer and monolayer membranes Jacob J. Schmidt, Noah Malmstadt, and Tae-Joon Jeon	U.S. Patent #8,038,885 Oct. 18, 2011
Stimuli-responsive polymer devices Patrick S. Stayton, Allan S. Hoffman, Noah Malmstadt, Tsuyoshi Shimoboji, and Samarth Kulkarni	U.S. Patent #7,625,764 Dec. 1, 2009

Funding

Over $6 million in external funding.

Current

- Contract MEDINC - 24-00027: "PLM-GLUT Research Contract (subject currently confidential)."
  Medtronic, Inc.
  Period of performance: September 2023 through May 2024
  100% of $78,000 total costs.
- NREL contract SUB-2023-10433: "Accelerating the Development of Catalytic Materials through Continuous Flow Synthesis Approaches Coupled with In Line Monitoring."
  National Renewable Energy Laboratory.
  Period of performance: September 2023 through May 2024.
  50% of $60,000 total costs. PI Richard Brutchey (USC Dept of Chemistry).

Completed

- PHY-1915017: "Understanding How Integral Membrane Proteins Influence the Continuum Mechanics of Cell Membranes". National Science Foundation.
  Period of performance: August 2019 to July 2022.
  100% of $350,000 total costs.
- CMMI-1728649: "Highly Parallel 3D Microfluidic Architectures for Manufacturing Catalytic Nanoparticles". National Science Foundation.
  Period of performance: July 2017 to July 2021.
  50% of $300,000 total costs.
- 1R01GM120351: "Effects of lipidomic diversity on GPCR activity".
  National Institutes of Health.
  Period of performance: September 2017 through August 2022.
  15% of $1,500,000 total costs. PI Edward Lyman (University of Deleware).
- 1R21CA204708: "A Target-Directed Reagent Pipeline via Microfluidic mRNA Display."
  National Institutes of Health.
  Period of performance: May 2017 through April 2021.
  50% of $609,000 total costs. Co-PI Rich Roberts (USC Dept of Chemical Engineering).
- N00014-16-1-2382: "Connecting Lipid Oxidation to Cellular Dysfunction in Hyperbaric Oxygen Toxicity." Office of Naval Research.
  Period of performance: July 2016 to July 2021.
  100% of $757,376 total costs.
- FP00209340: USC subcontract for "MURI: Molecular Mechanisms and Pathways for Gas Transport Across Biological Membranes and Implications for Physiology and Performance."
  Office of Naval Research.
  Period of performance: June 2016 through May 2021.
  100% of $1,000,000 total costs.
- NREL contract AEJ-7-62198-01: "High Temperature Continuous Flow Reactors for Catalytic Nanoparticle Synthesis." National Renewable Energy Laboratory.
  Period of performance: November 2016 through May 2019.
  50% of $59,831 total costs. PI Richard Brutchey (USC Dept of Chemistry).
- "Large-scale Isolation of Cytotoxic Extracellular Vesicles from Activated Natural Killer Cells for Immunotherapy of Cancer."
  Ming Hsieh Institute for Research of Engineering Medicine for Cancer.
  Period of performance: July 2017 through June 2019.
  50% of $130,000 total costs. Co-PI Robert Seeger (Children's Hospital Los Angeles).

- "Natural Killer Cell Extracellular Vesicles for Treatment of Neuroblastoma and Leukemia". Saban Research Institute Team Science Grant
  Period of performance: July 2017 through June 2018.
  30% of $100,000 total costs. PI Robert Seeger (Children's Hospital Los Angeles).
- "Modular Microfluidics to Detect Biomarkers for Upper Respiratory Infections." USC Mousetrap Fund.
  Period of performance: February 2017 through December 2017.
  100% of $100,000 total costs.
- CMMI-1068212: "Sustainable Scale-up of Nanoparticle Manufacturing Using Microreactors." National Science Foundation.
  Period of performance: August 2014 through July 2017.
  50% of $300,000 total costs. PI Malmstadt. Co-PI Richard Brutchey (USC Dept of Chemistry).
- "Modular Microfluidics to Automate ELISA for Diagnostics and Drug Discovery." Coulter Foundation.
  Period of performance: October 2016 through June 2017.
  100% of $53,490 total costs.
- NREL contract 150914: "A Continuous Microfluidic Approach for Scalable Nanoparticle Catalyst Synthesis." National Renewable Energy Laboratory.
  Period of performance: January through August 2016.
  50% of $23,000 total costs. PI Richard Brutchey (USC Dept of Chemistry).
- 1R01GM093279: "Connecting Plasma Membrane Function to Lipid Structure and Organization with Asymmetric Lipid Vesicles." NIH/Nat. Inst. of General Medical Sciences.
  Period of performance: September 2010 to September 2016.
  100% of $1,468,286 total costs.
- N00014-12-1-0620: "Probing the Molecular Origins of Cell Membrane Damage in Hyperbaric Oxygen Toxicity." (Young Investigator Award) Office of Naval Research.
  Period of performance: April 2012 – March 2015.
  100% of $510,000 total costs.
- CMMI-1068212: "Cholesterol Flip-Flop Dynamics and Nanomechanical Response of Deformed Biomembranes: Experiments and Petascale Simulation." National Science Foundation.
  Period of performance: April 2011 through April 2015.
  50% of $400,000 total costs. PI Malmstadt. Co-PIs Priya Vashishta, and Rajiv Kalia (USC Depts. of Chem. Eng. & Mat. Sci. and Physics).
- CBET-1067021: "Uncovering Fundamental Relationships Between Molecular Structure and Passive Cell Membrane Transport." National Science Foundation.
  Period of performance: May 2011 through April 2015.
  100% of $240,000 total costs.
- 1R01ES017034: "Nanoparticle Properties and Alveolar Epithelial Barrier/Transport functions." NIH/National Institute of Environmental Health Science.
  Period of performance: June 2009 through March 2014.
  2% of $1,824,750 total costs. PI Edward D. Crandall (USC Dept. of Medicine).
- N00014-13-1-0693: "Instrumentation for High-throughput Analysis of Oxidative Cell Membrane Damage." (Defense University Research Instrumentation Program) Office of Naval Research.
  Period of performance: Award for acquisition of permanent lab equipment
  100% of $95,132 total costs.
- IRG-58-007-48: "Towards Targeting Lipid Domains in Cancer Therapy." Amer. Cancer Soc.
  Period of performance: June 2009 through May 2010.
  100% of $20,000 total costs.

- C10R10800: "Separate but equal: Design of orthogonal, functional environments within living mammalian cells." Keck Foundation.
  Period of performance: May 2010 through October 2011.
  50% of $100,000 total costs. Co-PI Alanna Schepartz (Yale Dept. of Chemistry).
- 1R21AG033890: "Biomimetic Systems for Studying Nanoscale Structure Formation in Cell Membranes." NIH/National Institute on Aging.
  Period of performance: May 2009 through April 2012.
  100% of $336,970 total costs.
- CMMI-0926969: "Engineered Microfluidic Mixing for Green Nanocrystal Manufacturing." National Science Foundation.
  Period of performance: September 2009 through August 2011.
  50% of $270,000 total costs. Co-Investigator Richard Brutchey (USC Dept. of Chemistry).

Courses Taught

1. CHE/MASC 472: Polymer Science and Engineering (Fall 2007-2010)
University of Southern California. Course is a broad introductory survey of topics in polymer chemistry and physics with engineering applications. Polymer synthesis; chain conformation; polymer-solvent interactions, solubility and Flory-Huggins theory; polymer characterization including gel chromatography, light scattering, osmometry, and calorimetry; phase transitions; mechanical properties including viscoelasticity; rheology and flows; applications of polymers as engineering materials.
Average Numerical Student Ratings (out of 5.0) Instructor: 4.36; Course: 3.97

2. CHE 350: Introduction to Separation Processes (Spring 2009-2020)
University of Southern California. Core undergraduate course in separations. Vapor-liquid systems including flash separations, absorption and stripping, and distillation; liquid-liquid extraction; membrane separations; MESH approaches to simulating multistage, multicomponent equilibrium separation processes.
Average Numerical Student Ratings (out of 5.0) Instructor: 4.37; Course: 4.00

3. CHE 205: Numerical Methods in Chemical Engineering (Spring 2011-2014, Fall 2015-2016)
University of Southern California. Introduction to computer-based numerical methods. A MATLAB-based introduction to programming as a tool for solving engineering problems. Root-finding methods; minimization; linear systems; numerical integration and differentiation; differential equations.
Average Numerical Student Ratings (out of 5.0) Instructor: 3.96; Course: 3.70

4. CHE 443: Chemical Engineering Fluid Mechanics (Fall 2020-2023)
University of Southern California. Introduction to fluid mechanics. Rigorous definitions of viscosity and pressure, dimensionless groups, governing equations. Solution methods for prototypical fluid mechanics equations; approximate solutions to complex configurations. Pipe flow for incompressible and compressible fluids.
Average Numerical Student Ratings (out of 5.0) Instructor: 4.04; Course: 3.60

5. CHE 475: Physical Properties of Polymers (Spring 2022-2024)
University of Southern California. Advanced undergraduate course introducing a range of topics central to the production and processing of polymers. Polymer synthesis, thermodynamic properties of polymers in solution. Techniques for characterizing

polymer size and molecular weight. Properties of polymer elastic solids and viscoelastic solutions and melts. Processing techniques and applications.
Average Numerical Student Ratings (out of 5.0) Instructor: 4.50; Course: 4.50

6. CHE 444b: Chemical Engineering Laboratory (Fall 2023)
University of Southern California. A range of laboratory experiences covering chemical engineering themes including centrifugal pump characterization, corrosion, anodization, and Rankine cycles.
Average Numerical Student Ratings (out of 5.0) Instructor: 3.75; Course: 3.75

Students and Research Associates

Visiting Academics

2017 – 2019 Professor Hwankyu Lee, Dankook University, Korea.

2016 – 2017 Professor Tae-Joon Jeon, Inha University, Korea.

Postdoctoral Research Associates

2019-2021 Matthew Blosser (Ph.D. 2017, University of Washington)

2017-2020 Kaixuan Ren (Ph.D. 2015, Changchun Institute of Applied Chemistry)

2016-2018 Majid Monji (Ph.D. 2014, USC). Currently a Senior Surface Scientist at Aculon, Inc., San Diego, CA.

2014 – 2016 Celine Billerit (Ph.D. 2011, Chalmers U.). Currently Senior Marketing Manager & Engineer in Life Sciences at Fluicell AB, Gothenburg, Sweden.

2012 – 2014 Jesper S. Hansen (Ph.D. 2011, Tech. U. Denmark). Current a researcher at Lund University, Sweden.

2012 – 2014 James R. Thompson (D.Phil. 2009, U. Oxford). Currently Vice President of Software Engineering / Data Science, Energy Technology Savings, Inc., Livington, NJ.

Ph.D. Students

Thesis Advisor

2022 – present Sara Zacharia, Ph.D. student in Chemical Engineering.

2020 – present Ricki Chairil, Ph.D. student in Chemical Engineering.

2020 – present Bin Pan, Ph.D. student in Chemical Engineering.

2018 – 2023 Majed Madani, Ph.D. student in Chemical Engineering. “High-throughput synthesis of catalytic nanomaterials in flow reactors.” Currently a Professor at the University of Jeddah.

2018 – 2023 Lucia Dalle Ore, Ph.D. student in Materials Science. “Implications of intrinsic membrane proteins on cell plasma membrane mechanics.” Currently a postdoctoral scholar in the School of Pharmacy at USC.

2018 – 2022 Wan-Zhen Sophie Lin, Ph.D. student in Chemical Engineering. "Automation of biochemical workflows for cancer reagent design." Currently a scientist at Amgen.

2016 – 2022 Ahmed Elbaradei, Ph.D. student in Materials Science. "Impacts of lipid oxidation on membrane protein function." Currently a scientist at Amgen.

2014 – 2020 Lu Wang, Ph.D. in Chemical Engineering awarded March 2020. "Nanomaterial fabrication and nanomaterial interactions with synthetic cell membranes."

2016 – 2020 Nareh Movsesian, Ph.D. in Chemical Engineering awarded July 2020. "Porous polymer substrates for GUV growth and microfluidic chromatography." Co-advised with Prof. Malancha Gupta. Currently a Principal Materials Process Engineer at Northrop Grumman.

2015 – 2018 Bryant Thompson, Ph.D. in Biomedical Engineering awarded May 2018. "Cell culture in modular microfluidic devices." Currently a Senior Systems Engineer at Beckman Coulter Life Sciences, Miami FL.

2013 – 2016 M. Gertrude Gutierrez, Ph.D. in Materials Science awarded May 2016. "Phase behavior of intrinsic membrane proteins." Currently a Senior Scientist at AstraZeneca, San Francisco, CA.

2012 – 2016 Krisna Bhargava, Ph.D. in Materials Science awarded December 2015. "Modular microfluidic design theory and practice." Currently CEO of Go Arena, San Francisco, CA.

2011 – 2015 Kristina Runas, Ph.D. in Chemical Engineering awarded June 2015. "Passive transport across oxidized lipid bilayer membranes." Currently an Engineer at Intel, Hillsboro, OR.

2009 – 2015 Shalene Sankhagowit, Ph.D. in Chemical Engineering awarded November 2015. "Mechanical implications of oxidative damage to lipid bilayer membranes." Currently an instructor at Srinakharinwirot University, Thailand.

2009 – 2015 Carson T. Riche, Ph.D. in Chemical Engineering awarded May 2015. "Droplet-based ionic liquid reactions for nanomaterial fabrication." Co-advised with Prof. Malancha Gupta. Currently an Engineer at Labcyte, Inc., Sunnyvale, CA.

2007 – 2014 Yasaman Dayani, Ph.D. in Chemical Engineering awarded May 2014. "Hybrid lipid-synthetic material nanostructures." Currently Manager of the Agilent Center of Excellence at USC.

2007 – 2012 Su Li, Ph.D. in Chemical Engineering awarded December 2012. "Imaging molecular transport across and nanomaterial interaction with lipid membranes." Currently at the RES Group, Cambridge, MA.

Master's Degree Student Researchers

2020 – present Boya Li (M.S. Student in Chemical Engineering, USC)

2018 – 2020 Kenmond Pang (M.S. Student in Chemical Engineering, USC)

2016 – 2017 Yezi Gao (M.S. Student in Chemical Engineering, USC)

2015 – 2016 Nareh Movsesian (M.S. Student in Chemical Engineering, USC)

2015 – 2016 Roya Ermagan (M.S. Student in Chemical Engineering, USC)

2014 – 2016 Shuyang Wu (M.S. Student in Chemical Engineering, USC)

2014 – 2015 Anoop Tembhekar (M.S. Student in Biomedical Engineering, USC)

2013 – 2015 Bryant Thompson (M.S. Student in Biomedical Engineering, USC)

2013 – 2014 Jordan Tse (M.S. Student in Chemical Engineering, USC)

2007 – 2012 Astro S-J. Yang (M.S. in Materials Science and Industrial and Systems Engineering, USC)

Undergraduate Student Researchers

2021 – present Issa Nasrallah (B.S. Student in Chemical Engineering, USC)

2021 – present Leilani Serna (B.S. Student in Chemical Engineering, USC)

2021 – present Christopher Rincon (B.S. Student in Chemical Engineering, USC)

2020 – present Rabia Ali (B.S. Student in Chemical Engineering, USC)

2019 – present William Kristian Bostic (B.S. Student in Biomedical Engineering, USC)

2016 – 2018 Natalie Cobian (B.S. Student in Chemical Engineering, USC)

2016 – 2018 Sophie Lin (B.S. Student in Chemical Engineering, USC)

2016 – 2019 Andrew Friedman (B.S. Student in Chemical Engineering, USC)

2015 – 2017 Chen Liang (B.S. Student in Chemical Engineering, USC)

Summer 2016 Jacob Deyell (B.S. Student in Chemical Engineering, Johns Hopkins)

2015 – 2017 Kylee Mansfield (B.S. Student in Chemical Engineering, USC)

2015 – 2016 Eliza Petersen (B.S. Student in Chemical Engineering, USC)

Summer 2015 Justin Peruzzi (B.S. Student in Chemical Engineering, U of Virginia)

2014 – 2015 Danish Iqbal (B.S. Student in Chemical Engineering, USC)

2014 – 2015 Rob Young (B.S. Student in Chemical Engineering, USC)

2013 – 2015 Chuchu Zhang (B.S. Student in Chemical Engineering, USC)

2013 – 2014 Andrew Ronald (B.S. Student in Biomedical Engineering, USC)

Summer 2013 Kristof Toth (B.S. Student in Chemical Engineering, Cooper Union)

2012 – 2013 D.J. Mares (B.S. Student in Chemical Engineering, USC)

2012 – 2013 Catherine Higley (B.S. Student in Chemical Engineering, USC)

2012 – 2013 Antonis Papantoniou (B.S. Student in Chemical Engineering, USC)

2012 – 2014 Deepa Borkar (B.S. Student in Chemical Engineering, USC)

Summer 2011 Ashutosh Kulkarni (B.Tech. Student in Chemical Engineering, Nirma Institute of Technology)

2011 – 2013 Theresa Lai (B.S. Student in Chemical Engineering, USC)

2011 – 2012 Ken Diedrich (B.S. Student in Chemical Engineering, USC)

2010 – 2012 Daniel Lee (B.S. Student in Chemical Engineering, USC)

2010 – 2012 Brandon Marin (B.S. Student in Chemical Engineering, USC)

2009 – 2011 Anna Harley-Trochimczyk (B.S. Student in Chemical Engineering, USC)

Summer 2010 Asawari Moon (B.Tech. Student in Biotechnology, IIT Kharagpur)

2009 – 2010 James Lee (B.S. Student in Chemical Engineering, USC)

2009 – 2010 Steven Chu (B.S. Student in Chemical Engineering, USC)

2009 – 2010 Ola Bant (B.S. Student in Chemical Engineering, USC)

Summer 2009 Sagar Chakraborty (B.Tech. Student in Biotechnology, IIT Kharagpur)

2008 – 2009 Andrew Chang (B.S. Student in Chemical Engineering, USC)

Community College Student Interns

2019 Ruoying Zheng (East Los Angeles College)

2018 Jason Trang (East Los Angeles College)

2015 Hever Castellanos (East Los Angeles College)

2014 Josue Pacheco (East Los Angeles College)

Visiting K-12 Education Instructors

2018 LaDrina Toney (Compton Unified School District)

2017 Duke Alloh (Inglewood High School)

2016 Sam Taylor (7th Grade Science Teacher)

2014 Monica Au-Yeung (Charter High School for Arts, Performing and Multimedia in Van Nuys, CA)

2013 Claire Ilo (Inglewood High School)

2012 Julio Ferrufino (First Presbyterian School)

2011 Mary Mouring (32nd Street Media Arts and Engineering Magnet School)

2011 Manju Prakash (Fairmont Preparatory Academy)

2010 Tony DiMauro (Francisco Bravo High School)

High School Research Interns

2021 – 2022 Aarya Riasati and April Ramos (Ernesto Bravo Medical Magnet High School)

2019 – 2020 Anahy Sorto and Iris Arevalo (Ernesto Bravo Medical Magnet High School)

2018 – 2019 Chloe Garcia and Rachel Lim (Ernesto Bravo Medical Magnet High School)

2017 – 2018 David Bocanegra (Ernesto Bravo Medical Magnet High School)

2015 – 2016 Rotsen Palacios (Ernesto Bravo Medical Magnet High School)

2015 – 2016 Marco Cajero (Ernesto Bravo Medical Magnet High School)

2014 – 2015 Karen Hu (Ernesto Bravo Medical Magnet High School)

2013 – 2014	Nafi Mizan (Ernesto Bravo Medical Magnet High School)
Summer 2013	Nicole Sugiono (Diamond Bar High School)
2012 – 2013	Lwam Agostino (Ernesto Bravo Medical Magnet High School)
2011 – 2012	Jocelynda Salvador (Ernesto Bravo Medical Magnet High School)
2010 – 2011	Paloma Cruz (Ernesto Bravo Medical Magnet High School)

Professional and Service Activities

Professional Memberships

- American Institute of Chemical Engineers (AIChE)
- Biophysical Society (BPS)
- American Chemical Society (ACS)

Journal Reviewer (select list)

Biophysical Journal, Journal of the American Chemical Society, Nature Communications, Nature Chemistry, Lab on a Chip, BBA-Biomembranes, Bioconjugate Chemistry, Analytical & Bioanalytical Chemistry, Journal of Physical Chemistry Letters, Chemical Engineering Journal, Journal of Membrane Science, Langmuir, ACS Applied Materials and Interfaces, Biomicrofluidics, Nanoscale, Scientific Reports, Biomacromolecules, Chemical Science, Dalton Transactions, Micromachines,

Proposal Reviewer

2009 – present	National Science Foundation
2010 – present	National Institutes of Health

Community Outreach

2010 – 2014	Organizer of "Getting Published" workshop at the National Meeting of the Society of Hispanic Professional Engineers
2010 – present	Faculty advisor for students from the Engineering for Health Academy at Ernesto Bravo Medical Magnet High School
2010 – present	Host PI for high school teachers in NSF-funded Research Experience for Teachers programs at USC