Mark Andrew Borden

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Education

2003	Ph.D. in Chemical Engineering, University of California, Davis
1999	B.S. in Chemical Engineering, University of Arizona, Tucson

Academic Experience

2020 – present	Founding Director Biomedical Engineering Program, CU Boulder
2019 – present	Professor (with tenure) Department of Mechanical Engineering, CU Boulder
2012 – present	Fellow Materials Science and Engineering Program, CU Boulder
2013 – 2019	Associate Professor (with tenure) Department of Mechanical Engineering, CU Boulder
2016 – 2017	Visiting Professor Department of Information Engineering, University of Florence, Italy
2010 – 2013	Assistant Professor Department of Mechanical Engineering, CU Boulder
2007 – 2010	Assistant Professor Department of Chemical Engineering, Columbia University
2003 – 2007	Project Scientist Department of Biomedical Engineering, UC Davis Advisor: Katherine Ferrara, Ph.D.
2005 – 2006	Visiting Scientist Department of Radiology, University of Arizona Advisor: Robert Gillies, Ph.D.
1999 – 2003	Graduate Research Assistant Department of Chemical Engineering, UC Davis Advisor: Marjorie Longo, Ph.D.
1998 – 1999	Undergraduate Research Assistant Department of Electrical Engineering, University of Washington
1997 – 1998	Undergraduate Research Assistant Department of Chemical Engineering, University of Arizona

Entrepreneurial Experience

2017 – present	Chief Scientific Officer, Respirogen Inc.
2014 – present	Scientific Advisor, Advanced Microbubbles Inc.

Honors & Awards

2002, 2003	Exxon Summer Graduate Research Fellowship
2004	UC Davis Professors for the Future Fellowship
2006	Travel Award & Plenary Session, Society for Molecular Imaging
2008	James D. Watson Investigator Award
2010	NSF CAREER Award
2011	Nicholas Rome Faculty Fellow
2013	McLagan Family Faculty Fellow
2013	NAE Frontiers of Engineering Symposium
2014	Outstanding Research Award, Department of Mechanical Engineering, CU Boulder
2014	Dean’s Faculty Fellowship, CU Boulder

2019 Outstanding Service Award, Department of Mechanical Engineering, CU Boulder
2021 Outstanding Research Award, Department of Mechanical Engineering, CU Boulder

Popular Press and Editorial Matter

2006 Wired Magazine, “Microbubbles Fantastic Voyage”
2007 The Economist, “Bubbling Under”
2009 Columbia University Engineering Magazine, “Treating Tumors in Children”
2012 University of Colorado Engineering Alumni Magazine, “Building a Better (Micro) Bubble”
2014 Nature Nanotechnology, News & Views, “Ultrasound imaging: Better contrast with vesicles”
2016 Denver Channel 9 News, “Microbubble technology could save lives by helping create a 'third lung'”
2016 CU Boulder Today, “New 'microbubble' technology could save lives on battlefield, home front”
2018 Omaha World Herald, “Tiny bubbles could save people with lung injury”
2021 Boulder Daily Camera, “Boulder startup moves toward human trials for potentially life-saving oxygen therapy”
2021 Denver7 News, “Microbubbles could help COVID-19 patients & others with ARDS”

Research Grants

Ongoing Research Grants

Lab Venture Partners PHAST award
Respirogen Oxygen Microbubble Technology
01/2022 - 12/2022

Colorado Clinical and Translational Research Sciences (CCTSI) (PIs: Borden & Thomas)
Pilot Grant Award: *Endoskeletal nanodrops for x-ray photoacoustic dosimetry*
05/2021 - 04/2022

AB Nexus (PIs: Borden & Benninger)
Molecular targeting Phase-Change Ultrasound Contrast agents for Early Diagnosis and Guided Treatment of Type 1 Diabetes
08/2021 - 07/2022

NIH (NHLBI) R01 HL151151 (PI: Borden)
Peritoneal Oxygen Delivery for the treatment of Acute Respiratory Distress Syndrome
02/2020 - 01/2024

NIH (NCI) R01 CA239465 (PI: Borden)
Microbubble Dose Optimization for Image-Guided Drug Delivery
07/2019 - 06/2024

NIH (NCI) R01 CA232148 (PI: Dayton)
Treating tumoral hypoxia via ultrasound-guided oxygen release for improving radiation therapy
06/2018 - 05/2024

National Strategic Research Institute (MPI: Buesing, Terry, Borden)
Fielding Proof of Concept: En Route Care Acute Respiratory Distress System (ARDS) Mitigation Using Oxygenated Microbubbles (OMB), Phase 3
07/2019 - 06/2024

Completed Research Grants

NYSTAR James D. Watson Investigator Award C020028 (PI: Borden)
Design and Testing of Microbubbles for Medical Applications
01/2008-12/2009

Stewart Trust Award for Pilot Projects in Cancer Research (PI: Kandel)
Combined Ultrasound/Molecular Analysis of VEGF Blockade in Wilms Tumor
07/2008-06/2009

NIH R01 Award (NIBIB) EB009066 (MPI: Borden and Dayton)
Immune-Shielded, Ultrasound-Stimulated Contrast Agents for Ultrasound Molecular Imaging
09/2008-6/2012

NIH R21 Award (NCI) CA139173 (MPI: Borden and Kandel)
Combined Ultrasound/Molecular Analysis of VEGF Blockade in Wilms Tumor
05/2009-04/2011

St. Baldrick's Foundation Award 139214 (PI: Yamashiro)
Novel microbubble-based gene delivery vehicles targeting solid tumors
07/2009-06/2010

NSF Major Research Instrumentation CBET 0933621 (PI: Somasundaran)
Raman microscope for probing nano-bio interfaces and complex systems
09/2009-08/2010

NSF CAREER Award (Biomedical Engineering) CBET 0952681 (PI: Borden)
Phase-Shift Microbubbles for Intravenous Oxygenation
03/2010-02/2015

NSF CMMI 1100335 (PI: Borden)
Mechanics and Thermodynamics of Highly Compressed Lipid Monolayers
06/2011-05/2015

NIH R21 Award (NIBIB) EB014382 (MPI: Hung and Borden)
Microbubble Infused Hydrogels for Cartilage Tissue Engineering
08/2011-07/2013

NSF CBET 1133687 (PI: Borden)
Lanthanide-Lipids as MR Biosensors and Probes for Focused Ultrasound Surgery
09/2011-08/2014

NIH (NIBIB) R21 EB015040 (MPI: Sirsi, Kandel and Borden)
Quantitative Monitoring & Control of Tumor Vascular Permeability in vivo Using Microbubble Contrast Agents
07/2012-06/2014

CU Innovative Seed Grant (PI: Murray)
Plasmonic microbubbles
07/2012-06/2014

CCTSI Co-Pilot Grant Program, Independent Investigator (PI: Gutierrez-Hartmann)
Silencing transcription factor ESE-1 in vivo with tumor targeted sonoporation to treat breast cancer

01/2013-06/2014

NIH (NIBIB) R21 EB018034 (MPI: Goodwin, Borden, Gutierrez-Hartmann)
Targeted Microbubbles for Noninvasive Measurement of Tumor VEGF Levels
09/2014-09/2016

ONR (Undersea Medicine) 11766740 (PI: Borden)
Peritoneal Microbubble Oxygen Treatment for DCS
01/2015-12/2016

NIH (NHLBI) R21 HL129144 (MPI: Terry, Borden)
Oxygen Microbubble Peritoneal Ventilation Treatment for Acute Respiratory Distress Syndrome
07/2015-06/2017

Air Force FA4600-12-D-9000 (PI: Buesing)
Supporting Study to Transform En Route Care, Phase 1
09/2016-03/2018

NSF DMR 1409972 (PI: Borden)
Synthetic Alveoli for Enhanced Oxygen Delivery
09/2014-08/2018

National Strategic Research Institute (MPI: Buesing, Terry, Borden)
Supporting Study to Transform En Route Care, Phase 2
12/2017-3/2020

NIH (NCI) R01 CA195051 (MPI: Borden, Dayton, Thamm)
Ultrasound Molecular Imaging to Assess Therapeutic Response
04/2015-02/2021

Publications

Google Scholar Profile

Citations	9068	(updated 12/2021)
H-index	48	(updated 12/2021)

Peer-Reviewed Journal Articles

1. (2002) Gravano, Borden, von Werne, Doerffler, Salazar, Chen, Kisak, Zasadzinski, Patten, Longo. “Poly(4-(aminomethyl)styrene)-b-polystyrene: synthesis and unilamellar vesicle formation.” *Langmuir* 18(5): 1938-1941.
2. (2002) Borden, Longo. “Dissolution behavior of lipid monolayer-coated, air-filled microbubbles: effect of hydrophobic chain length.” *Langmuir* 18(24): 9225-9233.
3. (2004) Borden, Longo. “Oxygen permeability of fully condensed lipid monolayers.” *Journal of Physical Chemistry B* 108(19): 6009-6016.
4. (2004) Borden, Pu, Runner, Longo. “Surface phase behavior and microstructure of lipid monolayer-coated microbubbles.” *Colloids and Surfaces B: Biointerfaces* 35: 209-223.
5. (2004) Zhao, Borden, Bloch, Kruse, Ferrara, Dayton. “Radiation force assisted targeting facilitates ultrasonic molecular imaging.” *Molecular Imaging* 13: 1-14.
6. (2005) Pu, Longo, Borden. “Effect of microstructure on molecular oxygen permeation through condensed phospholipid monolayers.” *Journal of the American Chemical Society* 127: 6424-6425.

7. (2005) Borden, Kruse, Caskey, Zhao, Dayton, Ferrara. “Influence of lipid shell physicochemical properties on ultrasound-induced microbubble destruction.” *IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control* 52: 1992-2002.
8. (2006) Lum, Borden, Dayton, Kruse, Simon, Ferrara. “Ultrasound radiation force enables targeted deposition of model drug carriers loaded on microbubbles.” *Journal of Controlled Release* 111: 128-134.
9. (2006) Pu, Borden, Longo. “Collapse and shedding transitions in binary lipid monolayers coating microbubbles.” *Langmuir* 22: 2993-2999.
10. (2006) Borden, Martinez, Ricker, Tsvetokova, Longo, Gillies, Dayton, Ferrara. “Lateral phase separation in lipid-coated microbubbles.” *Langmuir* 22: 4291-4297.
11. (2006) Borden, Sarantos, Stieger, Simon, Ferrara, Dayton. “Ultrasound radiation force modulates ligand availability on ultrasound contrast agents.” *Molecular Imaging* 5(3):139-147.
12. (2007) Borden, Little, Gillies, Ferrara. “DNA and polylysine adsorption and multilayer construction onto cationic lipid-coated microbubbles.” *Langmuir* 23:9401-9408.
13. (2007) Steiger, Dayton, Borden, Caskey, Griffey, Wisner, Ferrara. “Imaging of angiogenesis using cadence contrast pulse sequencing and targeted contrast agents.“ *Contrast Media and Molecular Imaging* 3:9-18.
14. (2007) Ferrara, Pollard, Borden. “Ultrasound microbubble contrast agents: fundamentals and applications in gene and drug delivery.” *Annual Review of Biomedical Engineering* 9:415-447.
15. (2008) Borden, Zhang, Gillies, Dayton, Ferrara. “A stimulus-responsive contrast agent for ultrasound molecular imaging.” *Biomaterials*, 29:597-606.
16. (2008) Feshitan, Chen, Kwan, Borden. “Microbubble size isolation by differential centrifugation.” *Journal of Colloid and Interface Science* 329:316-324.
17. (2009) Borden. “Nanostructural features on stable microbubbles.” *Soft Matter*, 5:716-720.
18. (2009) Ferrara, Borden, Zhang. “Lipid-shelled vehicles: engineering for ultrasound molecular imaging and drug delivery.” *Accounts of Chemical Research* 42:881-892.
19. (2009) Longo, Lozano, Borden. “Physical chemistry of experimental models for lipid shells of medical microbubbles.” *Bubble Science, Engineering and Technology* 1:18-30.
20. (2009) Sirsi, Borden. “Microbubble compositions, properties and biomedical applications.” *Bubble Science, Engineering and Technology* 1:3-17.
21. (2009) Sirsi, Pae, Oh, Blomback, Koubaa, Papahadjopoulos-Sternberg, Borden. “Lung surfactant microbubbles.” *Soft Matter* 5:4835-4842.
22. (2010) Choi, Feshitan, Baseri, Wang, Tung, Borden, Konofagou. “Microbubble-size dependence of focused ultrasound-induced blood-brain barrier opening in mice in vivo.” *IEEE Transactions on Biomedical Engineering* 57:145-154.
23. (2010) Kwan, Borden. “Microbubble dissolution in a multigas environment.” *Langmuir*. 26: 6542–6548.
24. (2010) Sirsi, Feshitan, Kwan, Homma, Borden. “Effect of microbubble size on fundamental mode high frequency ultrasound imaging of mice.” *Ultrasound in Medicine and Biology* 6:935-948.
25. (2010) Epstein-Barash, Orbey, Polat, Ewoldt, Feshitan, Langer, Borden, Kohane. “A microcomposite hydrogel for repeated on-demand ultrasound-triggered drug delivery.” *Biomaterials* 31:5208-5217.
26. (2010) Chen, Borden. “Ligand conjugation to bimodal brush layers on microbubbles.” *Langmuir* 26:13183-13194.
27. (2010) Swanson, Mohan, Kheir, Borden. “Phospholipid stabilized microbubble foam for injectable oxygen delivery.” *Langmuir* 26:15726-15729.
28. (2011) Mullin, Gessner, Kwan, Kaya, Borden, Dayton. “Effect of anesthesia carrier gas on in vivo circulation times of ultrasound microbubble contrast agents in rats.” *Contrast Media and Molecular Imaging* 6:126-131.
29. (2011) Chen, Borden. “The role of poly(ethylene glycol) brush architecture in complement activation on targeted microbubble surfaces.” *Biomaterials* 32:6579-6587.

30. (2011) Tung, Vlachos, Feshitan, Borden, Konofagou. “The mechanism of interaction between focused ultrasound and microbubbles in blood-brain barrier opening in mice.” *Journal of the Acoustical Society of America* 130:3059–3067.
31. (2011) Swanson, Borden. “Injectable oxygen delivery based on protein-shelled microbubbles.” *Nano LIFE* 1:215-218.
32. (2012) Feshitan, Vlachos, Sirsi, Konofagou, Borden. “Theranostic Gd(III)-lipid microbubbles for MRI-guided focused ultrasound surgery.” *Biomaterials* 33:247-255.
33. (2012) Sirsi, Hernandez, Zielinski, Blomback, Koubaa, Synder, Homma, Kandel, Yamashiro, Borden. “Polyplex-microbubble hybrids for ultrasound-guided plasmid DNA delivery to solid tumors.” *Journal of Controlled Release* 157:224–234. COVER ARTICLE.
34. (2012) Chen, Sirsi, Borden. “Effect of surface architecture on *in vivo* ultrasound contrast persistence of targeted size-selected microbubbles.” *Ultrasound in Medicine and Biology* 38:492-503.
35. (2012) Flexman, Vlachos, Kim, Sirsi, Huang, Hernandez, Johung, Gander, Reichstein, Lampl, Wang, Borden, Yamashiro, Kandel, Hielscher. “Monitoring Early Tumor Response to Drug Therapy with Diffuse Optical Tomography.” *Journal of Biomedical Optics* 17:016014.
36. (2012) Kwan, Borden. “Lipid monolayer mechanics during microbubble gas exchange.” *Soft Matter*. 8:4756-4766.
37. (2012) Sirsi, Flexman, Vlachos, Huang, Hernandez, Kim, Johung, Gander, Reichstein, Lampl, Wang, Hielscher, Yamashiro, Kandel, Borden. “Contrast ultrasound allows identification of early responder tumor models to anti-angiogenic therapy.” *Ultrasound in Medicine and Biology* 38:1019–1029.
38. (2012) Kheir, Scharp, Borden, Swanson, Loxley, Reese, Black, Velazquez, Walsh, Mullen, Graham, Lawlor, Brugnara, Bell, McGowan. “Oxygen Gas–Filled Microparticles Provide Intravenous Oxygen Delivery.” *Science Translational Medicine* 4:140ra88.
39. (2012) Thomas, Looney, Butler, McDicken, Anderson, Emmer, Vos, de Jong, Borden, Stride, Pelekasis, Sboros. “The “quasi-stable” lipid shelled microbubble in response to consecutive ultrasound pulses.” *Applied Physics Letters*. Volume 101: article 071601.
40. (2012) Kwan, Borden. “Lipid monolayer collapse and microbubble stability.” *Advances in Colloid & Interface Science* 183–184:82–99.
41. (2012) Kwan, Kaya, Borden, Dayton. “Theranostic oxygen delivery with ultrasound.” *Theranostics* 2(12):1174-1184.
42. (2012) Sirsi, Borden. “Advances in ultrasound mediated gene therapy using microbubble contrast agents.” *Theranostics* 2(12):1208-1222. COVER ARTICLE.
43. (2021) Borden, Rege. “Theranostic biocolloids: soft matter colloids for imaging and therapy.” *Theranostics* 2(12):1115-1116.
44. (2012) Lima, Sirsi, Borden, Hung. “Microbubbles as biocompatible porogens for hydrogel scaffolds.” *Acta Biomaterialia* 8(12):4334–4341.
45. (2012) Feshitan, Boss, Borden. “Magnetic resonance properties of Gd-microbubbles and their cavitation fragments.” *Langmuir* 28(43):15336–15343.
46. (2013) Borden, Streeter, Sirsi, Dayton. “In vivo demonstration of cancer molecular imaging with ultrasound radiation force and buried-ligand microbubbles” *Molecular Imaging* 12(0):1-8.
47. (2013) Garg, Thomas, Borden. “The effect of lipid monolayer in-plane rigidity on in vivo microbubble circulation persistence.” *Biomaterials*. 34(28):6862-70.
48. (2013) Dove, Murray, Borden. “Enhanced photoacoustic response with plasmonic nanoparticle-templated microbubbles.” *Soft Matter* 9(32):7743-7750.
49. (2013) Sirsi, Fung, Garg, Tianning, Mountford, Borden. “Lung surfactant microbubbles increase lipophilic drug payload for ultrasound-targeted delivery.” *Theranostics* 3(6):409-419.
50. (2014) Feshitan, Legband, Borden, Terry. “Systemic oxygen delivery by peritoneal perfusion of oxygen microbubbles.” *Biomaterials* 35(9):2600-2606.
51. (2014) Satinover, Dove, Borden. “Single-particle optical sizing of microbubbles.” *Ultrasound in Medicine and Biology* 40(1):138-47.
52. (2014) Sirsi, Borden. “State-of-the-art materials for ultrasound-triggered drug delivery.” *Advanced Drug Delivery Reviews* 7:3-14. COVER ARTICLE.

53. (2014) Mountford, Sirsi, Borden. “Condensation phase diagrams for lipid-coated perfluorobutane microbubbles”. *Langmuir* 30(21):6209-18
54. (2014) Dove, Borden, Murray. “Optically induced resonance of nanoparticle-loaded microbubbles.” *Optics Express* 39(13):3732-5.
55. (2014) Liu, Feshitan, Wei, Borden, Yuan. “Ultrasound-modulated fluorescence based on fluorescent microbubbles.” *Journal of Biomedical Optics* 19(8):085005.
56. (2014) Borden. “Microbubble dispersions of natural lung surfactant.” *Current Opinion in Colloid and Interface Science* 19(5):480-489.
57. (2014) Mountford, Sirsi, Borden. “Condensation Phase Diagrams for Lipid-Coated Perfluorobutane Microbubbles.” *Langmuir* 30(21):6209–6218.
58. (2014) Dove, Mountford, Murray, Borden. “Engineering optically triggered droplets for photoacoustic imaging and therapy.” Biomedical Optics Express 5(12):4417-4427.
59. (2015) Legband, Feshitan, Borden, Terry. “Evaluation of Peritoneal Microbubble Oxygenation Therapy in a Rabbit Model of Hypoxemia.” *IEEE Transactions on Biomedical Engineering* 62(5):1376-1382.
60. (2015) Fix, Borden, Dayton. “Therapeutic gas delivery via microbubbles and liposomes.” *Journal of Controlled Release* 209:139-149.
61. (2015) Mountford, Thomas, Borden. “Thermal Activation of Superheated Lipid-Coated Perfluorocarbon Drops” *Langmuir* 31(16):4627-4634.
62. (2015) McEwan, Owen, Stride, Fowley, Nesbitt, Cochrane, Coussios, Borden, Nomikou, McHale, Callan. “Oxygen carrying microbubbles for enhanced sonodynamic therapy of hypoxic tumours” *Journal of Controlled Release* 203:51-56.
63. (2015) Liu, Feshitan, Wei, Borden, Yuan. “Ultrasound-modulated fluorescence based on donor-acceptor-labeled microbubbles.” *Journal of Biomedical Optics* 20(3):036012-036012.
64. (2015) Mountford, Smith, Borden. “Fluorocarbon Nanodrops as Acoustic Temperature Probes.” *Langmuir* 31(39):10656-10663.
65. (2015) Song, Fan, Brlansky, Trudeau, Gutierrez-Hartmann, Calvisi, Borden. “High Efficiency Molecular Delivery with Sequential Low-Energy Sonoporation Bursts.” *Theranostics* 5(12):1419.
66. (2016) McEwan, Kamila, Owen, Nesbitt, Callan, Borden, Nomikou, Hamoudi, Taylor, Stride, McHale, Callan, “Combined sonodynamic and antimetabolite therapy for the improved treatment of pancreatic cancer using oxygen loaded microbubbles as a delivery vehicle” *Biomaterials* 80:20-32.
67. (2016) Kim, Ferguson, Borden, Neu, “Application of elastography for the noninvasive assessment of biomechanics in engineered biomaterials and tissues” *Annals of Biomedical Engineering* 44(3):705-724.
68. (2016) Segers, de Rond, de Jong, Borden, Versluis, “Stability of monodisperse phospholipid-coated microbubbles formed by flow-focusing at high production rates” *Langmuir* 32(16):3937-3944.
69. (2016) Lum, Dove, Murray, Borden, “Single microbubble measurements of lipid monolayer viscoelastic properties for small-amplitude oscillations” *Langmuir* 32(37):9410-9417.
70. (2016) Mountford, Borden, “On the thermodynamics and kinetics of superheated fluorocarbon phase-change agents” *Advances in Colloid and Interface Science* 237:15-27.
71. (2016) Owen, McEwan, Nesbitt, Bovornchutichai, Averre, Borden, McHale, Callan, Stride, “Reducing Tumour Hypoxia via Oral Administration of Oxygen Nanobubbles” *PloS One* 11(12):e0168088.
72. (2017) Sheeran, Matsuura, Borden, Williams, Matsunaga, Burns, Dayton, “Methods of generating sub-micron phase-shift perfluorocarbon droplets for applications in medical ultrasonography” *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* 64(1):252-263.
73. (2017) Song, Fan, Hinkle, Newman, Borden, Harvey, “Microbubble gas volume: A unifying dose parameter in blood-brain barrier opening by focused ultrasound” *Theranostics* 7(1):144-152.
74. (2017) Thomas, Borden. "Hydrostatic Pressurization of Lung Surfactant Microbubbles: Observation of a Strain-Rate Dependent Elasticity.." *Langmuir* 33(47):13699-13707.

75. (2018) Lum, Stobbe, Borden, Murray. “Photoacoustic technique to measure temperature effects on microbubble viscoelastic properties.” *Applied Physics Letters* 112(11):111905.
76. (2018) Fix, Papadopoulou, Velds, Kasoji, Rivera, Borden, Chang, Dayton. “Oxygen microbubbles improve radiotherapy tumor control in a rat fibrosarcoma model–A preliminary study.” *PloS One* 13(4):e0195667.
77. (2018) Slagle, Thamm, Randall, Borden. “Click Conjugation of Cloaked Peptide Ligands to Microbubbles.” *Bioconjugate Chemistry* 29(5):1534-1543.
78. (2018) Song, Borden. “State-of-the-art of microbubble-assisted blood-brain barrier disruption.” *Theranostics*, 8(16):4393-4408.
79. (2018) Blue, Guidi, Vos, Slagle, Borden, Tortoli. “Plane Wave Contrast Imaging: A Radiation Force Point of View.” *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control,* 65(12):2296-2300.
80. (2018) Borden, Song. “Reverse engineering the ultrasound contrast agent.” *Advances in Colloid and Interface Science*. 262:39-49.
81. (2018) Borden. “Intermolecular forces model for lipid microbubble shells.” *Langmuir,* 35(31): 10042-10051.
82. (2019) Vernerey, Benet, Blue, Fajrial, Sridhar, Lum, Shakya, Song, Thomas, Borden. “Biological active matter aggregates: Inspiration for smart colloidal materials.” *Advances in Colloid and Interface Science*. 263:38-51.
83. (2019) Ferguson, Pak, Hopkins, Harral, Redinius, Loomis, Stenmark, Borden, Schroeder, Irwin. “Pre-clinical assessment of a water-in-fluorocarbon emulsion for the treatment of pulmonary vascular diseases.” *Drug delivery*. 26(1):147-157.
84. (2019) Song, Trudeau, Kar, Borden, Gutierrez-Hartmann. “Ultrasound-mediated delivery of siESE complexed with microbubbles attenuates HER2+/-cell line proliferation and tumor growth in rodent models of breast cancer.” *Nanotheranostics*. 3(2):212.
85. (2019) Rojas, Borden, Dayton. “Effect of hydrostatic pressure, boundary constraints and viscosity on the vaporization threshold of low-boiling-point phase-change contrast agents.” *Ultrasound in medicine & biology*. 45(4):968-979.
86. (2019) Guidi, Supponen, Upadhyay, Vos, Borden, Tortoli. “Microbubble radiation force-induced translation in plane-wave versus focused transmission modes.” *IEEE transactions on ultrasonics, ferroelectrics, and frequency control*. 66(12):1856-1865.
87. (2020) Reusser, Song, Ramirez, Benninger, Papadopoulou, Borden. “Phospholipid Oxygen Microbubbles for Image-Guided Therapy.” *Nanotheranostics*. 4(2):83.
88. (2020) Bellary, Villarreal, Eslami, Undseth, Lec, Defnet, Bagrodia, Kandel, Borden, Shaikh, Chopra, Laetsch, Delaney, Shaw, Eisenbrey, Hernandez, Sirsi. “Perfusion-guided sonopermeation of neuroblastoma: a novel strategy for monitoring and predicting liposomal doxorubicin uptake in vivo.” *Theranostics*. 10(18):8143.
89. (2020) Fiala, Slagle, Legband, Aghabaglou, Buesing, Borden, Harris, Terry. “Treatment of a rat model of LPS-induced ARDS via peritoneal perfusion of oxygen microbubbles.” *Journal of Surgical Research.* 246:450-456.
90. (2020) Brambila, Lux, Mattrey, Boyd, Borden, de Gracia Lux. “Bubble Inflation Using Phase-Change Perfluorocarbon Nanodroplets as a Strategy for Enhanced Ultrasound Imaging and Therapy.” *Langmuir*. 36(11):2954-2965.
91. (2020) Forghani, Mahl, Patton, Jones, Borden, Westerly, Altunbas, Miften, Thomas. “Simulation of x-ray-induced acoustic imaging for absolute dosimetry: Accuracy of image reconstruction methods.” *Medical physics.* 47(3):1280-1290.
92. (2020) Lum, Daeichin, Kienle, Schwartz, Murray, Borden. “Changes in microbubble dynamics upon adhesion to a solid surface.” *Applied physics letters.* 116(12):123703.
93. (2020) Shakya, Hoff, Wang, Heinz, Ding, Borden. “Vaporizable endoskeletal droplets via tunable interfacial melting transitions.” *Science advances* 6(14):eaaz7188.
94. (2020) Supponen, Upadhyay, Lum, Guidi, Murray, Vos, Tortoli, Borden. “The effect of size range on ultrasound-induced translations in microbubble populations.” *The Journal of the Acoustical Society of America*, 147(5):3236-3247.

95. (2020) Stride, Segers, Lajoinie, Cherkaoui, Bettinger, Versluis, Borden. “Microbubble agents: New directions.” *Ultrasound in medicine & biology*. 46(6):1326-1343.
96. (2020) Borden, Shakya, Upadhyay, Song. “Acoustic Nanodrops for Biomedical Applications.” *Current Opinion in Colloid & Interface Science*. 50:101383.
97. (2021) Daeichin, Inzunza-Ibarra, Lum, Borden, Murray. “Photoacoustic impulse response of lipid-coated ultrasound contrast agents.” *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control.* 68(6): 2311-2314.
98. (2021) Thomas, Song, Upadhyay, Papadopoulou, Ramirez, Benninger, Lowerison, Song, Murray, Borden. “Contrast-enhanced sonography with biomimetic lung surfactant nanodrops.” *Langmuir* 37 (7), 2386-2396.
99. (2021) Kuriakose, Borden. “Microbubbles and Nanodrops for Photoacoustic Tomography” *Current Opinion in Colloid & Interface Science*, 55:101464.
100. (2021) Ramirez, Ciccaglione, Upadhyay, Pham, Borden, Benninger. “Detecting insulitis in type-1 diabetes with ultrasound phase-change contrast agents.” *Proceedings of the National Academy of Sciences* 118 (41):e2022523118.

Book Chapters, Peer-Reviewed

1. (2008) Borden, Dayton. “Ultrasound Contrast Agents” in Molecular Imaging in Oncology. Ed., Pomper M., Informa Healthcare, Inc.
2. (2008) Dayton, Borden. “Ultrasound Molecular Imaging” in Molecular Imaging in Oncology. Ed., Pomper M., Informa Healthcare, Inc.
3. (2010) Borden, Qin, Ferrara. “Ultrasound Contrast Agents” in Molecular Imaging: Principles and Practice. Ed., Weissleder R., BC Dekkar, Inc.
4. (2011) Borden, Sirsi, Kwan. “Microbubble Stability and Dynamics” in Encyclopedia for Surface and Colloid Science. Ed., Somasundaran P., Taylor and Francis, Inc.
5. (2016) Borden, Dove, Murray, “Plasmonic nanoparticles-coated microbubbles for theranostic applications” in Nanotheranostics for Personalized Medicine, World Scientific, 115-146.
6. (2016) Borden, “Lipid-coated nanodrops and microbubbles” in Handbook of Ultrasonics and Sonochemistry, Springer, 1075-1100.
7. (2017) Sirsi SR, Borden MA. "Quantitative Contrast Enhanced Ultrasound Imaging in Cancer Therapy." in Cancer Therapeutics and Imaging: Molecular And Cellular Engineering and Nanobiomedicine. Eds. Rege K; Goklany S. World Scientific.137-155.
8. (2021) Borden, Dayton, Slagle, Walmer. “Ultrasound contrast agents.” Molecular imaging (2nd Ed.) Principles and Practice. Academic Press. 639-653.

Patents

Awarded

1. (2013) Microbubbles and methods for oxygen delivery, J Kheir, MA Borden, FX McGowan, US Patent 8,481,077
2. (2013) Microbubble devices, methods and systems, MA Borden, EG Lima, CT Hung, SR Sirsi, US Patent 8,617,892
3. (2015) Systems, methods, and devices for microbubbles, MA Borden, EJ Swanson, US Patent 9,107,950
4. (2016) Medical imaging contrast devices, methods, and systems, MA Borden, JA Feshitan, EE Konofagou, F Vlachos, US Patent 9,265,483
5. (2016) Systems and methods for opening a tissue, EE Konofagou, JJ Choi, MA Borden, US Patent 9,302,124
6. (2016) Formulation of acoustically activatable particles having low vaporization energy and methods for using same, PA Dayton, PS Sheeran, TO Matsunaga, MA Borden, US Patent 9,427,410
7. (2016) Microbubble devices, methods and systems, MA Borden, EG Lima, CT Hung, SR Sirsi, US Patent 9,506,027
8. (2018) Composition for on-demand ultrasound-triggered drug delivery, DS Kohane, H Epstein-Barash, MA Borden, US Patent 10,010,709

9. (2018) System and methods for ventilation through a body cavity, MA Borden, BS Terry, US Patent 10,124,126
10. (2019) Formulation of acoustically activatable particles having low vaporization energy and methods for using same, PA Dayton, PS Sheeran, TO Matsunaga, MA Borden, US Patent 10,493,038

Applications

1. (2009) Microbubbles and methods for oxygen delivery, J Kheir, MA Borden, FX McGowan, US Patent App. 12/240,704
2. (2011) Isolation of microbubbles of selected size range from polydisperse microbubbles, MA Borden, JA Feshitan, C Chen, SR Sirsi, JJ Kwan, US Patent App. 13/044,224
3. (2013) Methods devices and systems of preparing targeted microbubble shells, MA Borden, C Chen, US Patent App. 13/695,677
4. (2013) Systems, methods, and devices for plasmid gene transfection using polymer-modified microbubbles, MA Borden, SR Sirsi, US Patent App. 13/818,749
5. (2013) Systems, methods, and devices for ultrasonic assessment of cancer and response to therapy, MA Borden, J Kandel, SR Sirsi, D Yamashiro, US Patent App. 13/813,236
6. (2016) Methods devices and systems of preparing targeted microbubble shells, MA Borden, C Chen, US Patent App. 14/868,709
7. (2016) Systems and methods for opening a tissue, EE Konofagou, JJ Choi, MA Borden, US Patent App. 15/086,957
8. (2016) Formulation of acoustically activatable particles having low vaporization energy and methods for using same, PA Dayton, PS Sheeran, TO Matsunaga, MA Borden, US Patent App. 15/247,840
9. (2019) Systems, Methods, and Devices for Production of Gas-Filled Microbubbles, MA Borden, EJ Swanson, US Patent App. 16/047,100
10. (2019) Systems and methods for ventilation through a body cavity, MA Borden, BS Terry, US Patent App. 16/179,024
11. (2020) Compositions and method for treating pulmonary hypertension, D Irwin, T Schroeder, M Borden, PAK David, J Hopkins, US Patent App. 16/628,354
12. (2021) Devices and methods for delivery of oxygen to a wound, P Mountford, M Borden, RT Scribner, RM Scribner, US Patent App. 16/900,659
13. (2021) Aseptic process for azido-functionalized ligand conjugation to size-isolated microbubbles via strain-promoted azide-alkyne cycloaddition, MA Borden, C Slagle, US Patent App. 17/044,266
14. (2021) Oxygen delivery beverage, RM Scribner, P Mountford, M Borden, RT Scribner, US Patent App. 17/069,394
15. (2021) Treatments using oxygen microbubbles and cannabidiol, PA Mountford, RM Scribner, R T Scribner, MA Borden, US Patent App. 17/093,444

Presentations

Invited Lectures at Conferences, Universities, Institutes and Companies

1. (2005) Seminar, Chemical & Environmental Engineering, University of Arizona, Tucson, AZ.
2. (2006) Invited Talk, European Contrast Ultrasound Symposium, Rotterdam, Netherlands.
3. (2007) Invited Talk, Molecular Imaging Workshop, International Society for Magnetic Resonance in Medicine, Cancun, Mexico.
4. (2008) Invited Talk, Harvard Medical School and Boston Children's Hospital, Boston, MA.
5. (2008) Seminar, Irving Cancer Research Center, Columbia University, New York, NY.
6. (2008) Seminar, Chemical Engineering, City College of New York, NY.
7. (2008) Seminar, Chemical Engineering, Brooklyn Polytechnic University, New York, NY.
8. (2008) Seminar, Fluid Dynamics, Mechanical Engineering, NJIT, Newark, NJ.
9. (2008) Seminar, Chemical & Biomolecular Engineering, Drexel University, Philadelphia, PA.

10. (2008) Seminar, Riverside Research Institute, New York, NY.
11. (2009) Seminar, Chemical Engineering, Arizona State University, Tempe, AZ.
12. (2009) Invited Talk, New England Complex Fluids Workshop, Yale University, New Haven, CT.
13. (2009) Invited Talk, Contrast Media Research Conference, Copenhagen, Denmark.
14. (2010) Seminar, Moffitt Cancer Center, Tampa, FL.
15. (2010) Seminar, Chemical Engineering, Brigham Young University, Provo, UT.
16. (2010) Seminar, Philips Research Facility, Briarcliff, NY.
17. (2010) Invited Talk, Symposium on Microbubbles & Microencapsulation for Drug Delivery, University College London, United Kingdom.
18. (2010) Seminar, Chemical Engineering, University of Arizona, Tucson, AZ.
19. (2011) Seminar, Chemical Engineering, Colorado School of Mines, Golden, CO.
20. (2011) Invited Talk, Colorado Translational Research Imaging Center, Anschutz Medical Center, CO.
21. (2011) Invited Talk, Artimino Conference on Advances in Ultrasound Technology, Florence, Italy.
22. (2012) Invited Talk, European Contrast Ultrasound Symposium, Rotterdam, Netherlands.
23. (2012) Seminar, Oxford University, Oxford, United Kingdom.
24. (2012) Seminar, Mechanical and Aerospace Engineering, University of Colorado at Colorado Springs.
25. (2012) Seminar, Physics and Astronomy, University of New Mexico, Albuquerque, NM.
26. (2012) Seminar, Physics of Fluids, University of Twente, Netherlands.
27. (2012) Seminar, Mechanical Engineering, University of California Los Angeles (UCLA).
28. (2013) Seminar, SciMath Colloquium, UNK, Kearney, NE.
29. (2013) Invited Talk, LEEDS Microbubble Symposium, Leeds, United Kingdom.
30. (2013) Invited Talk, Focused Ultrasound Foundation Symposium, Bethesda, MD.
31. (2014) Seminar, Biomedical Engineering, Boston University, Boston, MA.
32. (2014) Seminar, Chemical Engineering, University of Arizona, Tucson, AZ.
33. (2014) Seminar, Mechanical Engineering, George Washington University, Washington, DC.
34. (2015) Seminar, Surgery, University of Chicago, Chicago, IL.
35. (2015) Seminar, Pediatrics, Anschutz Medical Campus, CO.
36. (2017) Seminar, School of Biomedical Engineering, CSU
37. (2017) Seminar, Institute of Biological and Medical Imaging, Helmholtz Munich
38. (2017) Seminars (2), Pharmacology, University of Florence
39. (2017) Seminar, Neurotechnology Group, ETH-Zurich
40. (2017) Seminar, Department of Chemical Science and Technology, University of Rome Tor Vergata
41. (2017) Seminar, Biomedical Engineering, Imperial College London
42. (2017) Seminar, Institute of Biomedical Engineering, Oxford University
43. (2017) Invited Talk, European Contrast Ultrasound Symposium, Rotterdam, Netherlands.
44. (2017) Invited Talk, Symposium on Ultrasound Triggered Drug Delivery, University of Ghent, Belgium
45. (2017) Invited Talk, International Congress on Ultrasonics, Hawaii
46. (2018) Invited Talk, American Institute for Ultrasound in Medicine, New York, NY.
47. (2018) Seminar, Chemical Engineering, UC Davis.
48. (2018) Seminar, Chemical and Biological Engineering, CU Boulder.
49. (2018) Invited Talk, Acoustical Society of America, Victoria, BC, Canada.
50. (2018) Invited Talk, Acoustical Society of America, Victoria, BC, Canada.
51. (2019) Invited Talk, European Contrast Ultrasound Symposium, Rotterdam, Netherlands.
52. (2019) Invited Talk, University of Florence, Information Engineering, Florence, Italy.
53. (2019) Invited Talk, University of Florence, Pharmacy, Florence, Italy.
54. (2019) Invited Talk, University of Rome Tor Vergata, Chemistry, Rome, Italy.
55. (2019) Invited Talk, Kavli Futures Symposium on Ultrasound Contrast Research, Dallas, TX.
56. (2019) Invited Talk, Biomedical Engineering, Imperial College, London, UK.
57. (2019) Seminar, Radiation Oncology, Anschutz Medical Center, Denver, CO.

58. (2020) Invited Talk, American Society of Echocardiography (virtual).
59. (2020) Seminar, Materials Science and Engineering, University of Houston, TX.
60. (2021) Seminar, NeuroOncology, Anschutz Medical Center, Denver, CO.
61. (2021) Invited Talk, ARDS Summit (virtual).
62. (2021) Invited Talk, Virtual Workshop on Ultrasound Contrast Agents, IIT Gandhinagar
63. (2021) Invited Talk, American Society of Gene and Cellular Therapy.
64. (2021) Invited Panelist, Acoustical Society of America, Acoustics in Focus.
65. (2022) Invited Talk, European Contrast Ultrasound Symposium, Rotterdam, Netherlands.

Contributed Oral Presentations

1. (2002) Borden, Longo. University of California System-Wide Biomedical Engineering Symposium, Santa Barbara, CA.
2. (2003) Borden, Longo. Materials Research Society, San Francisco, CA.
3. (2003) Borden, Longo. AIChE Annual Meeting, San Francisco, CA.
4. (2004) Borden, Longo. Materials Research Society, San Francisco, CA.
5. (2004) Borden, Ferrara. IEEE Ultrasonics Symposium, Montreal, Canada.
6. (2005) Borden, Ferrara. ACS Fall Meeting, Washington, DC.
7. (2005) Borden, Ferrara. BMES Annual Meeting, Baltimore, MD.
8. (2006) Borden, Ferrara. Society for Molecular Imaging Annual Meeting, Hawaii.
9. (2006) Borden, Ferrara. SBE International Conference on Bioengineering and Nanotechnology, Santa Barbara, CA.
10. (2007) Borden, Dayton, Ferrara. IEEE Ultrasonics Symposium, New York, NY.
11. (2007) Borden, Dayton, Ferrara. AIChE Annual Meeting, Salt Lake City, UT.
12. (2007) Borden, Ferrara. AIChE Annual Meeting, Salt Lake City, UT.
13. (2008) Choi, Feshitan, Wang, Tung, Baseri, Borden Konofagou. Symposium for International Society of Therapeutic Ultrasound, Minneapolis, MN.
14. (2008) Kheir, Zurakowski, McGowan, Borden. Society of Critical Care Medicine, Hawaii.
15. (2008) Borden, Kheir, McGowan. ACS Colloids & Surface Science Symposium, Raleigh, NC.
16. (2008) Borden. AIChE Annual Meeting, Philadelphia, PA.
17. (2008) Borden, Khair, McGowan. AIChE Annual Meeting, Philadelphia, PA.
18. (2008) Borden, Kandel, Yamashiro. AIChE Annual Meeting, Philadelphia, PA.
19. (2009) Kaya, Streeter, Borden, Feshitan, Hetiarachchi, Lee, Dayton. ACS Colloids and Surface Science Symposium, New York, NY.
20. (2009) Sirsi, Chen, Feshitan, Kwan, Fung, Borden. ACS Colloids and Surface Science Symposium, New York, NY.
21. (2009) Sirsi, Feshitan, Homma, Borden. IEEE International Ultrasonics Symposium, Rome, Italy.
22. (2009) Sirsi, Feshitan, Homma, Borden. World Molecular Imaging Congress, Montreal, Canada.
23. (2009) Sirsi, Chen, Feshitan, Kwan, Fung, Blomback, Borden. AIChE Annual Meeting, Nashville, TN.
24. (2009) Sirsi, Blomback, Zielinski, Hernandez, Yamashiro, Kandel, Borden. AIChE Annual Meeting, Nashville, TN.
25. (2009) Sirsi, Feshitan, Homma, Borden. AIChE Annual Meeting, Nashville, TN.
26. (2010) Durney, Sirsi, Nover, Ateshian, Konofagou, Maleke, Borden, Lima, and Hung. Annual Meeting of the Orthopedic Research Society, New Orleans, LA.
27. (2010) Sirsi, Chen, Hernandez, Huang, Johung, Yamashiro, Kandel, Homma, Borden. (2010). BMES Annual Meeting, Austin, TX.
28. (2010) Feshitan, Sirsi, Kwan, Tung, Konofagou, Borden. AIChE Annual Meeting, Salt Lake City, UT.
29. (2010) Kwan, Borden. AIChE Annual Meeting, Salt Lake City, UT.
30. (2010) Chen, Borden. AIChE Annual Meeting, Salt Lake City, UT.
31. (2010) Sirsi, Chen, Hernandez, Huang, Johung, Yamashiro, Kandel, Homma, Borden. IEEE International Ultrasonics Symposium, San Diego, CA.

32. (2010) Kwan, Borden. IEEE Ultrasonics Symposium, San Diego, CA.
33. (2011) Samiotaki, Vlachos, Tung, Feshitan, Borden, Konofagou. Symposium for International Society of Therapeutic Ultrasound, New York, NY.
34. (2011) Vlachos, Tung, Feshitan, Borden, Konofagou. Symposium for International Society of Therapeutic Ultrasound, New York, NY.
35. (2011) Tung, Vlachos, Feshitan, Borden, Konofagou. Symposium for International Society of Therapeutic Ultrasound, New York, NY.
36. (2011) Swanson, Mohan, Kheir, Borden. ACS Colloids & Surface Science Symposium, Montreal, Canada.
37. (2011) Borden, Kwan. ACS Fall Meeting, Denver, CO.
38. (2011) Sirsi, Hernandez, Zielinski, Blomback, Koubaa, Synder, Kandel, Yamashiro, Borden. BMES Annual Meeting, Hartford, CT.
39. (2011) Feshitan, Vlachos, Tung, Konofagou, Borden. AIChE Annual Meeting, Minneapolis, MN.
40. (2011) Kwan, Borden. AIChE Annual Meeting, Minneapolis, MN.
41. (2011) Borden, Swanson, Song. ASME International Mechanical Engineering Congress and Exposition (IMECE), Denver, CO.
42. (2012) Borden, Kwan. International Association of Colloid and Interface Scientists, Sendai, Japan.
43. (2012) Sirsi, Fung, Garg, Tianning, Mountford, Borden. BMES Annual Meeting, Atlanta, GA.
44. (2012) Dove, Murray, Borden. ASME IMECE, Houston, TX.
45. (2012) Kwan, Borden. Surfactants in Solution International Conference, Edmonton, Alberta, Canada.
46. (2013) Dove, Murray, Borden. ASME Global Congress on Nano Engineering for Medicine and Biology, Boston, MA.
47. (2013) Song, Sirsi, Trudeau, Gutierrez-Hartmann, Borden. ASME Global Congress on Nano Engineering for Medicine and Biology, Boston, MA. Outstanding Paper Award.
48. (2013) Dove, Borden, Murray. ACS National Meeting, New Orleans, LA.
49. (2013) Borden. ACS National Meeting, New Orleans, LA.
50. (2013) Garg, Thomas, Borden. ACS National Meeting, New Orleans, LA.
51. (2013) Feshitan, Boss, Borden. ACS National Meeting, New Orleans, LA.
52. (2013) Sirsi, Hernandez, Zeilinski, Blomback, Koubaa, Synder, Homma, Kandel, Yamshiro, Borden. ACS National Meeting, New Orleans, LA.
53. (2013) Mountford, Borden. ACS National Meeting, New Orleans, LA.
54. (2013) Dove, Murray, Borden. BMES Annual Meeting, Seattle, WA.
55. (2013) Sirsi, Kandel, Yamashiro, Borden. BMES Annual Meeting, Seattle, WA.
56. (2013) Legband, Buesing, Borden, Terry. *Journal of Medical Devices* 9(2):020929.
57. (2014) Song, Sirsi, Trudeau, Gutierrez-Hartmann, Borden. ASME NEMB, San Francisco, CA.
58. (2014) Mountford, Borden. ASME NEMB, San Francisco, CA.
59. (2014) Dove, Borden, Murray. SPIE Photonics West, San Francisco, CA.
60. (2014) Borden, Mountford. ACS Colloids and Surface Science Symposium, Philadelphia, PA.
61. (2014) Borden, Dove, Murray. ACS Colloids and Surface Science Symposium, Philadelphia, PA.
62. (2014) Borden, Song, Fan. ACS Colloids and Surface Science Symposium, Philadelphia, PA.
63. (2014) Borden, Feshitan, Legband, Terry. ACS Colloids and Surface Science Symposium, Philadelphia, PA.
64. (2014) Kelly, Sirsi, Nover, Chen, Ditzel, Mountford, Etezazian, Ateshian, Borden, Hung. (2014). BMES Annual Meeting, San Antonio, TX.
65. (2014) Mountford, Sirsi, Borden. IEEE International Ultrasonics Symposium, Chicago, IL.
66. (2015) Buesing, Legband, Goede, Borden, Terry. *SHOCK.* 43(6):67-68.
67. (2015) Borden, Mountford. ACS Colloids and Surface Science Symposium, Pittsburgh, PA.
68. (2015) Song, Fan, Brlansky, Trudeau, Gutierrez-Hartmann, Calvisi, Borden. ASME NEMB, Minneapolis, MN.
69. (2015) Mountford, Sirsi, Thomas, Borden. ASME NEMB, Minneapolis, MN.
70. (2015) Borden. Microbubble Engineering. Nanomedicine Symposium, Anschutz Medical Center.

71. (2016) Borden, Song. ACS Colloids and Surface Science Symposium, Boston, MA.
72. (2016) Lum, Dove, Murray, Borden. IEEE International Ultrasonics Symposium, Tours, France.
73. (2016) Mountford, Borden. IEEE International Ultrasonics Symposium, Tours, France.
74. (2016) Thomas, Borden. BMES Annual Meeting, Phoenix, AZ.
75. (2017) Borden, F. Guidi, A. Ramalli, P. Tortoli. ACS Colloids and Surface Science Symposium, New York, NY.
76. (2017) Papadopoulou, Fix, Velds, Kasoji, Rivera, Borden, Chang, Dayton. ACS Colloids and Surface Science Symposium, New York, NY.
77. (2017) Lum, Stobbe, Murray, Borden. ACS Colloids and Surface Science Symposium, New York, NY.
78. (2017) Thomas, Borden. ACS Colloids and Surface Science Symposium, New York, NY.
79. (2017) Borden. Artemino Conference on Medical Ultrasound Technology, Florence, Italy.
80. (2017) Eslami, Hernandez, Lec, Borden, Kandel, Sirsi. BMES Annual Meeting, Phoenix, AZ.
81. (2017) Swift, Velds, Slagle, Borden. ONR Undersea Medicine Program Review.
82. (2017) Lum, Stobbe, Murray, Borden. IEEE International Ultrasonics Symposium, Washington DC.
83. (2018) Borden. ACS Colloids and Surface Science Symposium, College Station, PA.
84. (2018) Borden. Active Matter Symposium, CU Boulder.
85. (2019) Supponen, Guidi, Upadhyay, Vos, Tortoli, Borden. Acoustical Society of America, Louisville, KY.
86. (2019) Alnajar, Sridhar, Borden, Vernerey, Calvisi. Acoustical Society of America, San Diego, CA.
87. (2019) Thomas, Lum, Murray, Borden. Acoustical Society of America, San Diego, CA.
88. (2019) Supponen, Guidi, Upadhyay, Vos, Tortoli, Borden. Acoustical Society of America, San Diego, CA.
89. (2019) Reusser, Ramirez, Benninger, Papadopoulou, Dayton, Borden. IEEE International Ultrasonics Symposium (IUS), Glasgow, Scotland, UK.
90. (2019) Supponen, Upadhyay, Lum, Guidi, Murray, Vos, Tortoli, Borden. IEEE International Ultrasonics Symposium (IUS), Glasgow, Scotland, UK.
91. (2019) Lum, Daeichin, Murray, Borden. IEEE International Ultrasonics Symposium (IUS), Glasgow, Scotland, UK.
92. (2019) Bellary, Villarreal, Eslami, Undseth, Hernandez, Lec, Kandel, Borden, Shaikh, Chopra, Sirsi. IEEE International Ultrasonics Symposium (IUS), Glasgow, Scotland, UK.
93. (2019) Song, Fan, Harvey, Borden. IEEE International Ultrasonics Symposium (IUS), Glasgow, Scotland, UK.
94. (2019) Borden. Artimino Advances in Ultrasound Conference, Nijmegen, Netherlands.
95. (2019) Borden. International Ultrasound Congress, Bruges, Belgium.
96. (2020) Daeichin, Lum, Borden, Murray. European Contrast Ultrasound Symposium.
97. (2020) Shakya, Hoff, Wang, Heinz, Ding, Borden. European Contrast Ultrasound Symposium.
98. (2020) Thomas, Forghani, Mahl, Jones, Borden, Miften. American Physical Society 65.
99. (2020) Forghani, Mahl, Jones, Borden, Miften, Thomas. Bulletin of the American Physical Society 65.
100. (2020) Shakya, Hoff, Wang, Heinz, Ding, Borden. Bulletin of the American Physical Society 65.
101. (2020) Upadhyay, Supponen, Guidi, Vos, Tortoli, Borden. Bulletin of the American Physical Society 65.
102. (2020) Upadhyay, Borden. Biomedical Engineering Society.
103. (2020) Shakya, Borden. Biomedical Engineering Society.
104. (2020) Inzunza, Borden. Biomedical Engineering Society.
105. (2021) Angelini, Kuriakose, Upadhyay, Inzunza, Borden. European Contrast Ultrasound Symposium.
106. (2021) Silwal, Inzunza, Shakya, Borden. European Contrast Ultrasound Symposium.
107. (2021) Shakya, Yang, Fajrial, Gao, Borden, Ding. European Contrast Ultrasound Symposium.
108. (2021) Alnajar, Sridhar, Borden, Vernerey, Calvisi. European Contrast Ultrasound Symposium.
109. (2021) Inzunza, Borden, Murray. Acoustical Society of America.

110. (2021) Shakya, Borden. ACS Colloids and Surface Science Symposium.
111. (2021) Upadhyay, Borden. ACS Colloids and Surface Science Symposium.
112. (2021) Navarro-Becerra, Song, Borden. IEEE Latin America Ultrasound Symposium.
113. (2021) Inzunza, Murray, Borden. IEEE Latin America Ultrasound Symposium.
114. (2021) Navarro-Becerra, Song, Borden. IEEE International Ultrasound Symposium.
115. (2021) Shakya, Yang, Fajrial, Gao, Borden, Ding. IEEE International Ultrasound Symposium.
116. (2021) Lowerison, Upadhyay, Borden, Song. IEEE International Ultrasound Symposium.

Contributed Poster Presentations

1. (2000) Borden, Longo. AIChE Annual Meeting, Los Angeles, CA.
2. (2001) Borden, Longo. ACS National Meeting, San Diego, CA.
3. (2001) Borden, Longo. AIChE Annual Meeting, Reno, NV.
4. (2002) Borden, Longo. Biophysical Society Annual Meeting, San Francisco, CA.
5. (2003) Borden, Longo. Sacramento Biotechnology Summit, CA.
6. (2003) Borden, Longo. Biophysical Society Annual Meeting, San Antonio, TX.
7. (2004) Borden, Ferrara. Sacramento Life Sciences Summit, CA.
8. (2004) Borden, Ferrara. Society for Molecular Imaging Meeting, St. Louis, MO.
9. (2004) Borden, Ferrara. Annual Cancer Research Symposium, Cancer Center, Sacramento, CA.
10. (2006) Borden, Ferrara, Gillies. Arizona Biosciences Leadership Symposium, Phoenix, AZ.
11. (2006) Borden, Ferrara. NIH Bioengineering Research Partnership Grantees Meeting, Bethesda, MD.
12. (2006) Borden, Ferrara. GRC Drug Carriers in Medicine and Biology, Big Sky, MT.
13. (2008) Feshitan, Kwan, Borden. GRC Drug Carriers in Medicine and Biology, Big Sky, MT.
14. (2009) Chen, Borden. ACS Colloids and Surface Science Symposium, New York, NY.
15. (2009) Feshitan, Chen, Borden. ACS Colloids and Surface Science Symposium, New York, NY.
16. (2009) Kwan, Chen, Borden. ACS Colloids and Surface Science Symposium, New York, NY.
17. (2009) Sirsi, Hernandez, Feshitan, Yamashiro, Kandel, Borden. ACS Colloids and Surface Science Symposium, New York, NY.
18. (2009) Feshitan, Chen, Borden. AIChE Annual Meeting, Nashville, TN.
19. (2009) Chen, Borden. AIChE Annual Meeting, Nashville, TN
20. (2009) Kwan, Borden. AIChE Annual Meeting, Nashville, TN.
21. (2010) Swanson, Borden. Liposomes 2010, Vancouver, Canada.
22. (2011) Sirsi, Huang, Hernandez, Johung, Gandner, Reichstein, Lampl, Wang, Homma, Yamshiro, Kandel, Borden. World Molecular Imaging Congress, San Diego, CA.
23. (2011) Borden. Butcher Symposium, Westminster, CO.
24. (2012) Mountford, Borden. NSF CMMI annual meeting, Boston, MA.
25. (2013) Mountford, Sirsi, Baus, Kinzie, Etezazian, Lima, Hung, Borden. BMES Annual Meeting, Seattle, WA.
26. (2013) Song, Feshitan, Fan, Yang, Sirsi, Borden. BMES Annual Meeting, Seattle, WA.
27. (2014) Borden, Feshitan, Legband, Terry. GRC Drug Carriers in Medicine and Biology, Waterville Valley, NH.
28. (2014) Dove, Borden, Murray. IEEE International Ultrasonics Symposium, Chicago, IL.
29. (2014) Song, Fan, Trudeau, Gutierrez-Hartmann, Borden. IEEE International Ultrasonics Symposium, Chicago, IL.
30. (2014) Dove, Borden. IEEE International Ultrasonics Symposium, Chicago, IL.
31. (2015) Swift, Terry, Borden. Office of Naval Research Undersea Medicine Program Review, Buffalo, NY.
32. (2016) Hatoum, Borden, Terry, ASME Design of Medical Devices Conference, Minnesota, MN.
33. (2016) Legband, Borden, Terry, ASME Design of Medical Devices Conference, Minnesota, MN.
34. (2017) Velds, Borden. ACS Colloids and Surface Science Symposium, New York, NY.
35. (2017) Slagle, Borden. ACS Colloids and Surface Science Symposium, New York, NY.
36. (2017) Rojas, Borden, Dayton. IEEE International Ultrasonics Symposium, Washington, DC.

37. (2017) Fix, Papadopoulou, Velds, Kasoji, Rivera, Borden, Dayton. IEEE International Ultrasonics Symposium, Washington, DC.
38. (2017) Papadopoulou, Fix, Velds, Borden, Tsuruta, Dayton. IEEE International Ultrasonics Symposium, Washington, DC.
39. (2017) Papadopoulou, Fix, Velds, Chang, Borden, Dayton. IEEE International Ultrasonics Symposium, Washington, DC.
40. (2017) Thomas, Borden. BMES Annual Meeting, Phoenix, AZ.
41. (2018) Aghabaglou, Buesing, Legband, Slagle, Xie, Borden, Kreikemeier-Bower, Terry. ASME Design of Medical Devices Conference, Minnesota, MN.

Teaching and Mentoring Activities

Courses Taught

2007, Fall	CHEN E3110 Transport Phenomena I, 3 credit hours, 36 students (co-taught with Chris Durning)
2008, Spring	CHEN E4030 Biocolloid Engineering Design, 3 credit hours, 18 students
2008, Fall	CHEN E4300 Chemical Engineering Control, 2 credit hours, 10 students
2009, Spring	CHEN E3810 Chemical Engineering Lab, 3 credit hours, 34 students (co-taught with Scott Banta and Jordan Spencer)
	CHEN E4030 Biocolloid Engineering Design, 3 credit hours, 9 students
2009, Fall	CHEN E4300 Chemical Engineering Control, 2 credit hours, 29 students
2010, Spring	CHEN E3810 Chemical Engineering Lab, 3 credit hours, 35 students (co-taught with Jordan Spencer and Carmen Pacheco-Borden)
	CHEN E4030 Biocolloid Engineering Design, 3 credit hours, 13 students
2011, Spring	MCEN 5040 Methods of Engineering Analysis 2, 3 credit hours, 37 students
2011, Fall	MCEN 4228/5228 Biocolloids and Biomembranes, 3 credit hours, 16 students
2012, Spring	MCEN 3022-1 Heat Transfer, 3 credit hours, 73 students
2012, Fall	MCEN 3022 Heat Transfer, 3 credit hours, 28 students
	MCEN 4228/5228 Biomedical Ultrasound, 3 credit hours, 18 students
2013, Spring	MCEN 4228/5228 Cells, Molecules and Tissues, 3 credit hours, 26 students (co-taught with Tom Perkins)
2013, Fall	MCEN 3022 Heat Transfer, 3 credit hours, 52 students
	MCEN 4228/5228 Biocolloids and Biomembranes, 3 credit hours, 15 students
2014, Spring	MCEN 3022 Heat Transfer, 3 credit hours, 183 students
	MCEN 4228/5228 Cells, Molecules and Tissues, 3 credit hours, 24 students (Co-taught with Tom Perkins)

2015, Spring	MCEN 3022 Heat Transfer, 3 credit hours, 96 students
	MCEN 4228/5228 Surface Forces in Biology, 3 credit hours, 24 students
2015, Fall	MCEN 4228/5228 Biomedical Ultrasound, 3 credit hours, 29 students
2016, Spring	MCEN 1024 Chemistry for Energy and Mat Sci, 3 credit hours, 95 students
	MCEN 4228/5228 Surface Forces in Biology, 3 credit hours, 24 students
2017, Fall	MCEN 4127/5127 Biomedical Ultrasound, 3 credit hours, 11 students
2018, Spring	MCEN 6228 Active Matter, 3 credit hours, 11 students (co-taught with Franck Vernerey)
2018, Fall	MCEN 3022 Heat Transfer, 3 credit hours, 55 students
2019, Spring	BMEN 2000 Intro to Biomedical Engineering, 3 credit hours, 45 students
2019, Fall	MCEN 4228/5228 Design of Coffee, 40 students (co-taught with Carmen Pacheco-Borden)
2020, Spring	BMEN 2000 Intro to Biomedical Engineering, 3 credit hours, 49 students
2021, Spring	BMEN 1000 Explore BME, 1 credit hour, 92 students
	BMEN 2000 Intro to Biomedical Engineering, 3 credit hours, 23 students (majors)
	BMEN 2000 Intro to Biomedical Engineering, 3 credit hours, 35 students (nonmajors)
2021, Fall	BMEN 2000 Intro to Biomedical Engineering, 3 credit hours, 70 students
	BMEN 3010 Biotransport, 3 credit hours, 21 students

Workshops

2012 Tutorial Session on Bubbles and Emulsions, ACS National Meeting, New Orleans.
2012 Preclinical Micro-ultrasound & Photoacoustic Imaging Symposium, University of Colorado.
2017 Ultrasonics & Photoacoustics, Small Animal Imaging Workshop, University of Colorado.
2018 Engineering Microbubbles for Biomedical Applications, GIAN, India Institute of Technology, Gandhinagar.
2018 Chemistry & Physics of Ultrasound Contrast Agents, IEEE IUS, Kobe, Japan.
2019 Boulder Summer School on Ultrasound Contrast Agents, Boulder, CO.
2019 Chemistry & Physics of Ultrasound Contrast Agents, IEEE IUS, Glasgow, Scotland.

Guest Lectures

2004 Advanced Colloid and Surface Phenomena (ECH 254), UC Davis.
2005 Colloid and Surface Phenomena (ECH 170/254), UC Davis.
2008,9,10 Ultrasound in Diagnostic Imaging (BMEN 4410), Columbia University.
2008,9,10 Engineering Principles of Drug Delivery (CH 637), NYU-Polytechnic.
2012 Graduate Student Roundtable Discussion, Biochemistry, Anschutz Medical Campus.
2015 Colloids and Interfaces (CHEN 5835), CU Boulder

Mentoring Activities

Visiting Professors:

2018-2019 Michael Calvisi, UCCS
2018-2019 Richard Benninger, CU Anschutz

Postdoctoral Fellows:

2008-2014 Shashank Sirsi (Professor at UT Dallas)
2009-2010 Sameer Dalvi (Professor at IIT Gandhinagar)
2011-2012 James Kwan (Professor at Oxford University)
2012-2013 Sumit Garg (Argonne National Lab)
2012-2014 Jameel Feshitan (Founder of Advanced Microbubbles Inc.)
2019 Outi Supponen (Professor at ETH Zurich)
2019 Verya Daeichin (Postdoc at TU Delft)
2020-2021 Maju Kuriakose (Instructor at University of Washington)
2017-present Kang-Ho Song
2018-present Awaneesh Upadhyay
2020-present Jose Angel Navarro-Becerra

Doctoral Students:

2007-2011 James Kwan (Professor at Oxford University)
2007-2011 Cherry Chen (Consultant at Bluestar BioAdvisors)
2007-2012 Jameel Feshitan (Founder of Advanced Microbubbles Inc.)
2010-2015 Jake Dove (Senior Engineer at Medtronic Inc.)
2011-2015 Paul Mountford (Founder of Respirogen Inc.)
2010-2016 Kang-Ho Song (Research Engineer at CU Boulder)
2014-2018 Alec Thomas (Postdoc at Oxford University)
2014-2020 Jordan Lum (Lawrence Livermore National Lab)
2015-2021 Gazendra Shakya (Postdoc at ETH Zurich)
2019-2021 Marco Inzunza (Postdoc at CU Boulder)
2019-present Anish Silwal
2021-present Payton Martinez
2021-present Jair Castillo

Masters Students:

2007-2008 Zhobou Li
2007-2009 Shunxi Ji
2008-2009 Henning Blomback (Karolinska)
2008-2010 Adel Koubaa (Karolinska)
2009-2010 Lukasz Zielinski (Univ. London)
2010-2011 Kryztopher Tung
2011-2012 Christopher Doudna
2011-2012 Scott Satinover
2015-2017 Lauchlin Blue
2020-2021 John Myers
2020-2021 Ilaria Angelini (Univ. Rome)
2021 Noelle Doyle
2021 Federico Di Ruzza (Univ. Rome)

Undergraduate Students:

2007-2008 Calvin Pae, ChE
2007-2008 David Kyung Tek Oh, ChE
2008-2009 Nicholas Chen, ChE

2008-2009 Chinpong Fung, ChE (Cornell)
2008-2009 Wayne Cheung, ChE
2008-2009 HeeSoo Kim, ChE
2009-2010 Jonathan Liu, ChE
2009-2010 Vickram Mohan, ChE
2009-2010 Melissa Moy, ChE
2009-2010 Tianning Mary Ye, ChE
2009-2010 Richard Ruizhi Li, ChE
2009-2010 Gizem Obrey, ChE
2009-2010 Nathan Lee, ChE
2009-2010 Hamzat Feshitan, Pharm
2010-2011 Milo Snyder, ChE
2011-2011 Lauren Gardenswartz, ME
2011-2012 Jocelyn Mulkey, ME
2011-2012 Carly Barnard, ME
2011-2012 Matthew Long, ME
2011-2013 Rena Yang, ME, (UROP awardee, DLA awardee)
2012-2012 Jesus Javier Rodales, ME (Ball Fellowship)
2012-2013 Alex Thomas, ChE
2012-2013 Ian Baus, ME
2012-2013 Emma Kinzie, ME
2011-2014 Shirin Etezazian, ME
2012-2014 Alexander Fan, ME
2013-2014 Alec Thomas, Environ Engr
2013-2014 Danim Jeong, ME
2013 spring Daniel Kim, ME
2014 spring Samantha Pettus, ME
2014 sum Brett Jeffrey, ChBE
2014 sum Samuel Berens, ChE, (Princeton)
2014 fall Aaron Davidson, ME
2014 fall Alexander Hinesley, ME
2014 fall Charles Norwood, ME
2014 fall Evan Mori, ME
2014 fall Ivar Lycke, ME
2014 fall Riley Pepia, ME
2014-2015 William Smith, ME
2014-2015 Andrew Gloor, ME
2015 spring Elliot Toth, ME
2015 spring Kyle Galbraith, ME
2015-2016 David Pak, ME
2016 spring Justin Hopkins, ChE
2018 spring Birttany Callin, ChE
2020 spring Olivia Mazzapica, ChE
2020 spring Dan Whitney, ME
2020 fall Marshall Engelhard, ME
2021 spring Alex Mizzi, BME
2021 spring Maxim Kokoshinskiy,BME
2021 fall Sonia Amin, BME

High School Students:
2008 Andrew Pesco
2008 Jing Jian
2009 Monique Honeyghan (Harlem Childrens Society)
2009 Givi Basishvili (Harlem Childrens Society)

2009 Xavier Marrero (Harlem Childrens Society)
2013 Aniruddh Prakash
2015 Daniel Kim

Service Activities

Global Service

Served as grant reviewer for European Research Council (ERC), National Science Foundation of China (NSFC), French Institut national de la santé et de la recherche médicale (INSERM), Fundação para a Ciência e a Tecnologia (FCT-Portugal), Alberta Innovates Health Solutions (AIHS), Swiss National Science Foundation, Auckland Medical Research Foundation, Scottish Government and other international bodies.

2017-present Member of Scientific Committee, European Contrast Ultrasound Symposium.
2018-present Member of Technical Program Committee, IEEE International Ultrasonics Symposium.

National Service

Served as grant reviewer on multiple NSF panels for CBET and CMMI, NIH study sections for CMIP, ZRG and NOIT; DOD CDMRP panels

2017-2021 Standing Member, NIH Biomaterials and Bio-Interfaces (BMBI) study section.

University and College Service

2011 College of Engineering Best Dissertation Award committee
2012-2016 BMES student chapter faculty advisor
2012 Biofrontiers Task Force
2013-2015 Provost's Research Review Board
2017 Member, CEAS Soft Matter Faculty Search
2018 Chair, CEAS Faculty Search Committee, Imaging Science
2018-2020 Director, Biomedical Engineering Minor
2018-2020 Member, Biomedical Engineering Program Task Force
2019-2020 Member, CEAS First Level Review Committee
2019-2020 Chair, CEAS Faculty Search Committee, Biomedical Engineering
2017-present BMES student chapter faculty advisor
2020-present Founding Director, Biomedical Engineering Program

Departmental Service

2007-2010 Graduate Committee, Chemical Engineering, Columbia University
2007-2010 AIChE Student Chapter Advisor, Columbia University
2010 Faculty Search Committee, Chemical Engineering, Columbia University
2010-2013 Graduate Committee, Mechanical Engineering, CU Boulder
2013 Organizer, GEARRS Mechanical Engineering Graduate Student Recruitment
2013 Faculty Search Committee, Mechanical Engineering, CU Boulder
2013-2016 Personnel Committee, Mechanical Engineering, Boulder
2015 Faculty Search Committee, CEAS, CU Boulder
2017-2018 Personnel Committee, Mechanical Engineering, CU Boulder

Professional Society Service

2008 Session Chair, Applications in the Life Sciences, ACS Colloids Symposium, Raleigh, NC.
2008 Judge, Undergraduate Poster Session, AIChE Annual Meeting, Philadelphia, PA.
2009 Symposium Organizer, Biocolloids for Imaging and Drug Delivery, ACS Colloids and Surface Science Symposium, New York, NY
2009 Session Chair, Bioimaging and Diagnostics, AIChE Annual Meeting, Nashville, TN.
2009 Session Chair, Colloids Self Assembly, AIChE Annual Meeting, Nashville, TN.
2009 Judge, Undergraduate Poster Session, AIChE Annual Meeting, Nashville, TN.

2009 Abstract Reviewer, World Molecular Imaging Congress, Montreal, Canada.
2010 Session Chair, Molecular Imaging I, BMES Annual Meeting, Austin, TX.
2011 Session Chair, Biocolloids and Biological Interfaces, ACS Colloids Meeting, Montreal, Canada.
2011 Session Chair, Emulsions and Foams, AIChE Annual Meeting, Minneapolis, MN.
2011 Session Chair, Ultrasound Contrast Agents, Artimino Conference on Advances in Ultrasound Technology, Florence, Italy.
2011 Session Chair, Biomedical Imaging, Diagnostic, Monitoring and Therapeutic Methods II, ASME International Mechanical Engineering Congress and Expo, Denver, CO.
2011 Judge, Poster Session, Micro/Nano Technology Forum, ASME International Mechanical Engineering Congress and Expo, Denver, CO.
2011 Abstract Reviewer, World Molecular Imaging Congress, San Diego, CA.
2012 Jury, Poster Session, European Contrast Ultrasound Symposium, Rotterdam, Netherlands.
2012 Session Chair, Supramolecular Organized Systems, IACIS, Sendai, Japan.
2013 Symposium Organizer, "Emulsions, Bubbles and Foams", ACS National Meeting, New Orleans.
2013 Tutorial session, Emulsions, Bubbles and Foams, ACS National Meeting, New Orleans, LA.
2017 Symposium Organizer, "Emulsions, Bubbles and Foams", ACS Colloids Division Meeting, New York, NY.
2018 Session Chair, Competition on Acoustical Droplet Vaporization, European Contrast Ultrasound Symposium, Rotterdam, Netherlands.
2018 Session Chair, Emulsions, Bubbles and Foams, ACS Colloids and Surface Science Symposium, College Station, PA.
2018 Session Chair, Ultrasound Mediated Agent Delivery, IEEE International Ultrasonics Symposium, Kobe, Japan.
2019 Track Chair and Session Chair, IEEE IUS, Glasgow, Scotland.
2020 Track Chair and Session Chair, IEEE IUS, Las Vegas, NV
2020 Abstract Reviewer, Biomedical Engineering Society (BMES) Annual Meeting
2020 Grant Reviewer, Colorado Clinical and Translational Sciences Institute (CCTSI)
2021 Track Chair and Session Chair, IEEE IUS, Virtual
2021 Abstract Reviewer & Session Chair, Biomedical Engineering Society (BMES) Annual Meeting
2021 Grant Reviewer, Focused Ultrasound Foundation
2021 Grant Reviewer, AB Nexus
2022 Organizer, Artimino Conference on Medical Ultrasound Technology, Boulder, CO

Editorial Activities

2012-2020 Editorial Board, *Theranostics*
2016-present Associate Editor, *Journal of Membrane Biology*

Community Outreach Activities

2005 Organized university visit for Sacramento high school students to BME labs at UC Davis
2008 Columbia University Double Discovery Center
2008 Ascension Elementary School Science Fair
2009 Mentor for Harlem Children's Society
2011 ASPIRE Summer Bridge Program, BOLD Center, CU Boulder
2011 CO Advantage graduate preview weekend
2011 Girls Explore Engineering Day
2012 Discovery Learning Apprentice program
2020 Make4Covid Task Force