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EDUCATION

Northwestern University, Evanston, IL
Ph.D. in Chemical and Biological Engineering 2009
Advised by Bartosz A. Grzybowski

University of Virginia, Charlottesville, VA
B.S. in Chemical Engineering 2003

APPOINTMENTS

Columbia University, New York, NY
Associate Professor of Chemical Engineering 2016–

Pennsylvania State University, University Park, PA
Dorothy Quiggle Assistant Professor of Chemical Engineering 2015–2016
Assistant Professor of Chemical Engineering 2010–2015

Harvard University, Cambridge, MA
Post-Doctoral Fellow, Department of Chemistry & Chemical Biology 2009–2010
Advised by George M. Whitesides

AWARDS AND HONORS

NSF CAREER Award 2013
3M Non-Tenured Faculty Award 2012–2014
Outstanding Graduate Student Award, Northwestern University 2008
Visiting Scholar, International Centre for Theoretical Physics, Trieste, IT 2008
Northwestern University Fellow 2008
NSF Graduate Research Fellow 2005–2008
NSF-IGERT Dynamics of Complex Systems Graduate Fellow 2004–2005
Rodman Scholar, University of Virginia 1999–2003

PEER REVIEWED PUBLICATIONS

Dr. Bishop has an *h*-index of 36 with an average of 73 citations per article; citation statistics were obtained from Google Scholar on November 27, 2018. Underlined names represent supervised students and post-docs.

Submitted

82. J.G. Lee, A.M. Brooks, W.A. Shelton, K.J.M. Bishop, B. Bharti*, Directed propulsion of spherical particles along 3D helical trajectories.
81. J.S. Schreck*, C.W. Coley, K.J.M. Bishop*, Learning retrosynthetic planning through simulated experience. [arXiv:1901.06569](https://arxiv.org/abs/1901.06569)

Published

80. A.M. Brooks, M. Tasinkevych, S. Sabrina, D. Velegol, A. Sen*, K.J.M. Bishop*, Shape-directed motion of homogeneous micromotors via catalytic self-electrophoresis. *Nat. Commun.* **10**, 495 (2019) [10.1038/s41467-019-08423-7](https://doi.org/10.1038/s41467-019-08423-7)
79. Y. Dou, K. Dhatt-Gauthier, K.J.M. Bishop*, Thermodynamic costs of dynamic function in active soft matter. *Curr. Opin. Solid State Mater. Sci.* in press (2019) [10.1016/j.cossms.2018.11.002](https://doi.org/10.1016/j.cossms.2018.11.002)
78. Y. Dou, S. Pandey, C.A. Cartier, O. Miller, K.J.M. Bishop*, Emergence of traveling waves in linear arrays of electromechanical actuators. *Comm. Phys.* **1**, 85 (2018) [10.1038/s42005-018-0086-4](https://doi.org/10.1038/s42005-018-0086-4)
77. Y. Gu, V. Hegde, K.J.M. Bishop*, Measurement and mitigation of free convection in microfluidic gradient generators. *Lab Chip* **18**, 3371-3378 (2018) [10.1039/C8LC00526E](https://doi.org/10.1039/C8LC00526E)
76. W. Fei, M.M. Driscoll, P.M. Chaikin, K.J.M. Bishop*, Magneto-capillary dynamics of amphiphilic Janus particles at curved liquid interfaces. *Soft Matter* **14**, 4661-4665 (2018) [10.1039/c8sm00518d](https://doi.org/10.1039/c8sm00518d)
75. S. Sabrina, M. Tasinkevych, S. Ahmed, A.M. Brooks, M. Olvera de la Cruz, T.E. Mallouk, K.J.M. Bishop*, Shape-directed micro-spinners powered by ultrasound. *ACS Nano* **12**, 2939-2947 (2018) [10.1021/acsnano.8b00525](https://doi.org/10.1021/acsnano.8b00525)
74. K.J.M. Bishop*, A.M. Drews, C.A. Cartier, S. Pandey, Y. Dou, Contact charge electrophoresis: Fundamentals and microfluidic applications. *Langmuir* **34**, 6315-6327 (2018) [10.1021/acs.langmuir.7b02946](https://doi.org/10.1021/acs.langmuir.7b02946)
73. A.M. Brooks, S. Sabrina, K.J.M. Bishop*, Shaped-directed dynamics of active colloids powered by induced-charge electrophoresis. *Proc. Natl. Acad. Sci. U.S.A.* **115**, E1090-E1099 (2018) [10.1073/pnas.1711610115](https://doi.org/10.1073/pnas.1711610115)
72. W. Fei, Y. Gu, K.J.M. Bishop*, Active colloidal particles at fluid-fluid interfaces. *Curr. Opin. Colloid Interface Sci.* **32**, 57-68 (2017) [10.1016/j.cocis.2017.10.001](https://doi.org/10.1016/j.cocis.2017.10.001)
71. C.A. Cartier, J. Graybill, K.J.M. Bishop*, Electrostatic generation and ratcheted transport of charged aqueous drops. *Phys. Rev. E* **96**, 043101 (2017) [10.1103/PhysRevE.96.043101](https://doi.org/10.1103/PhysRevE.96.043101)
70. K.J.M. Bishop*, Acoustic Metamaterials: Living Bandgaps. *Nature Materials* **16**, 786-787 (2017) [10.1038/nmat4947](https://doi.org/10.1038/nmat4947)
69. A. Schantz, P. Saboe, I. Sines, H.Y. Lee, K.J.M. Bishop, J.K. Maranas, P. Butler, M. Kumar*, PEE-PEO block copolymer exchange rate between micelles is detergent and temperature activated. *Macromolecules* **50**, 2484-2494 (2017) [10.1021/acs.macromol.6b01973](https://doi.org/10.1021/acs.macromol.6b01973)

68. Y. Dou, C.A. Cartier, W. Fei, S. Pandey, S. Razavi, I. Kretzschmar, K.J.M. Bishop*, Directed motion of metallodielectric particles by contact charge electrophoresis. *Langmuir*, 32, 13167–13173 (2016) [10.1021/acs.langmuir.6b03361](https://doi.org/10.1021/acs.langmuir.6b03361)
67. A. Garg, C.A. Cartier, K. J.M. Bishop, and D. Velegol*, Particle zeta potentials remain finite in saturated salt solutions. *Langmuir*, 32, 11837–11844 (2016) [10.1021/acs.langmuir.6b02824](https://doi.org/10.1021/acs.langmuir.6b02824)
66. M. Kowalik, K.J.M. Bishop*, Ratcheted electrophoresis of Brownian particles. *Appl. Phys. Lett.* 108, 203103 (2016) [10.1063/1.4950801](https://doi.org/10.1063/1.4950801)
65. K.J.M. Bishop*, Hierarchical self-assembly for nanomedicine. *Angew. Chem. Int. Ed.* 55, 2–5 (2016) [10.1002/anie.201510751](https://doi.org/10.1002/anie.201510751)
64. S. Sabrina, M. Spellings, S.C. Glotzer*, K.J.M. Bishop*, Coarsening dynamics of binary liquids with active rotation. *Soft Matter*, 11, 8409–8416 (2015) [10.1039/C5SM01753J](https://doi.org/10.1039/C5SM01753J)
63. M. Spellings, D. Klotsa, M. Engel, S. Sabrina, A.M. Drews, N.H.P. Nguyen, K.J.M. Bishop*, S.C. Glotzer*, Shape control and compartmentalization in active colloidal cells. *Proc. Natl. Acad. Sci. U.S.A.* 112, E4642–E4650 (2015) [10.1073/pnas.1513361112](https://doi.org/10.1073/pnas.1513361112)
62. S.H.R. Shin[†], H.-Y. Lee[†], K.J.M. Bishop*, Amphiphilic nanoparticles control the growth and stability of lipid bilayers with open edges. *Angew. Chem. Int. Ed.* 54, 10816–10820 (2015) [10.1002/anie.201504362](https://doi.org/10.1002/anie.201504362)
61. K.J.M. Bishop*, Nanoscale self-assembly: Seeing is understanding. *ACS Cent. Sci.* 1, 16–17 (2015) [10.1021/acscentsci.5b00087](https://doi.org/10.1021/acscentsci.5b00087)
60. A.M. Drews, C.A. Cartier, K.J.M. Bishop*, Contact Charge Electrophoresis: Experiment and Theory. *Langmuir* 31, 3808–3814 (2015) [10.1021/acs.langmuir.5b00342](https://doi.org/10.1021/acs.langmuir.5b00342)
59. L. Cademartiri*, K.J.M. Bishop, Programmable self-assembly. *Nature Mater.* 14, 2–9 (2015) [10.1038/nmat4184](https://doi.org/10.1038/nmat4184)
58. T.H. Hermans, K.J.M. Bishop, P.S. Stewart, S.H. Davis, B.A. Grzybowski*, Vortex Flows impart chirality-specific lift forces. *Nature Comm.* 6, 5640 (2015) [10.1038/ncomms6640](https://doi.org/10.1038/ncomms6640)
57. H.Y. Lee[†], S.H.R. Shin[†], A.M. Drews, A.M. Chirsan, S.A. Lewis, K.J.M. Bishop*, Self-assembly of adaptive nanoparticle amphiphiles with tunable valence. *ACS Nano* 8, 9979–9987 (2014) [10.1021/nn504734v](https://doi.org/10.1021/nn504734v)
56. C.A. Cartier, A.M. Drews, K.J.M. Bishop*, Microfluidic mixing of nonpolar liquids by contact charge electrophoresis. *Lab Chip* 14, 4230–4236 (2014) [10.1039/C4LC00811A](https://doi.org/10.1039/C4LC00811A)
55. A.M. Drews, M. Kowalik, K.J.M. Bishop*, Charge and force on a conductive sphere between two parallel electrodes: a Stokesian dynamics approach. *J. Appl. Phys.* 116, 074903 (2014) [10.1063/1.4893308](https://doi.org/10.1063/1.4893308)
54. A.M. Drews, L. Cademartiri, G.M. Whitesides, K.J.M. Bishop*, Electric winds driven by AC corona discharges. *J. Appl. Phys.* 114, 143302 (2013) [10.1063/1.4824748](https://doi.org/10.1063/1.4824748)
53. A.M. Drews, H.Y. Lee, K.J.M. Bishop*, Ratcheted electrophoresis for rapid particle transport. *Lab Chip* 13, 4295–4298 (2013) [10.1039/C3LC50849H](https://doi.org/10.1039/C3LC50849H)
52. K.J.M. Bishop*, N.R. Chevalier, B.A. Grzybowski*, When and why like-sized, oppositely-charged particles assemble into diamond-like crystals. *J. Phys. Chem. Lett.* 4, 1507–15111 (2013) [10.1021/jz4006114](https://doi.org/10.1021/jz4006114)

51. H.Y. Lee, S.H.R. Shin, L.L. Abezgauz, S.A. Lewis, A.M. Chirsan, D. Danino, K.J.M. Bishop*, Integration of gold nanoparticles into bilayer structures via adaptive surface chemistry. *J. Am. Chem. Soc.* 135, 5950-5953 (2013) [10.1021/ja400225n](https://doi.org/10.1021/ja400225n)
50. A.M. Drews, L. Cademartiri, M.L. Chemama, M.P. Brenner, G.M. Whitesides, K.J.M. Bishop*, AC fields drive steady flows in flames. *Phys. Rev. E* 86, 036314 (2012) [10.1103/PhysRevE.86.036314](https://doi.org/10.1103/PhysRevE.86.036314)
49. M. Kowalik, C.M. Gothard, A.M. Drews, N.A. Gothard, B.A. Grzybowski*, K.J.M. Bishop*, Parallel optimization of synthetic pathways within the network of organic chemistry. *Angew. Chem. Int. Ed.* 51, 7928-7932 (2012) [10.1002/anie.201202209](https://doi.org/10.1002/anie.201202209)
48. L. Cademartiri, G. Geurin, K.J.M. Bishop, M.A. Winnik*, G.A. Ozin*, Polymer-like conformation and growth kinetics of Bi₂S₃ nanowires. *J. Am. Chem. Soc.* 134, 9327-9334 (2012) [10.1021/ja301855z](https://doi.org/10.1021/ja301855z)
47. D.M. Andala, S.H.R. Shin, H.Y. Lee, K.J.M. Bishop*, Templated synthesis of amphiphilic nanoparticles at the liquid-liquid interface. *ACS Nano* 6, 1044-1050 (2012) [10.1021/nn202556b](https://doi.org/10.1021/nn202556b)
46. L. Cademartiri*, K.J.M. Bishop, P.W. Snyder, G.A. Ozin, Using shape for self-assembly. *Phil. Trans. R. Soc. A* 370, 2824-2847 (2012) [10.1098/rsta.2011.0254](https://doi.org/10.1098/rsta.2011.0254)
45. B. Kowalczyk, K.J.M. Bishop, I. Lagzi, D. Wang, Y.H. Wei, S. Han, B.A. Grzybowski*, Charged nanoparticles as supramolecular surfactants for controlling the growth and stability of microcrystals. *Nature Mater.* 11, 227-232 (2012) [10.1038/nmat3202](https://doi.org/10.1038/nmat3202)
44. H. Nakanishi, D.A. Walker, K.J.M. Bishop, Y. Yan, P.J. Wesson, S. Soh, S. Swaminathan, B.A. Grzybowski*, Dynamic internal gradients control and direct electric currents within nanostructured materials. *Nature Nano.* 6, 740-746 (2011) [10.1038/nnano.2011.165](https://doi.org/10.1038/nnano.2011.165)
43. W. Choi, M. Hashimoto, A.K. Ellerbee, X. Chin, K.J.M. Bishop, P. Garstecki, H.A. Stone, G.M. Whitesides*, Bubbles flowing through networks of microchannels. *Lab Chip* 11, 3970-3978 (2011) [10.1039/C1LC20444K](https://doi.org/10.1039/C1LC20444K)
42. C. Stan, S. Tang, K.J.M. Bishop, G.M. Whitesides*, Externally-applied electric fields up to 1.6×10⁵ V/m do not affect the homogeneous nucleation of ice in supercooled water. *J. Phys. Chem. B* 115, 1089-1097 (2011) [10.1021/jp110437x](https://doi.org/10.1021/jp110437x)
41. K.P. Browne, D.A. Walker, K.J.M. Bishop, B.A. Grzybowski*, Self-division of macroscopic droplets partitions nanoscopic cargo into nanoscale micelles. *Angew. Chem. Int. Ed.* 49, 6756-6759 (2010) [10.1002/anie.201002551](https://doi.org/10.1002/anie.201002551)
40. D.A. Walker, C.E. Wilmer, B. Kowalczyk, K.J.M. Bishop, B.A. Grzybowski*, Precision assembly of oppositely- and like-charged nanoobjects mediated by charge-induced dipole interactions. *Nano Lett.* 10, 2275-2280 (2010) [10.1021/nl1012079](https://doi.org/10.1021/nl1012079)
39. M.M. Apodaca, P.J. Wesson, K.J.M. Bishop, M.A. Ratner, B.A. Grzybowski*, Contact electrification between identical materials. *Angew. Chem. Int. Ed.* 49, 946-949 (2010) [10.1002/anie.200905281](https://doi.org/10.1002/anie.200905281)
38. M.-G. Song, K.J.M. Bishop, A.O. Pinchuk, B. Kowalczyk, B.A. Grzybowski*, Formation of dense nanoparticle monolayers mediated by AC electric fields and electro-hydrodynamic flows. *J. Phys. Chem. C* 114, 8800-8850 (2010) [10.1021/jp1008253](https://doi.org/10.1021/jp1008253)
37. S. Huda, S.K. Smoukov, H. Nakanishi, B. Kowalczyk, K.J.M. Bishop, B.A. Grzybowski*, Antibacterial Nanoparticle Monolayers Prepared on Chemically Inert Surfaces by Cooperative Electrostatic Adsorption (CELA). *ACS Appl. Mater. Interfaces* 2, 1206-1210 (2010) [10.1021/am100045v](https://doi.org/10.1021/am100045v)

36. Y. Wei, K.J.M. Bishop, J. Kim, S. Soh, Bartosz A. Grzybowski*, Making Use of Bond Strength and Steric Hindrance in Nanoscale Synthesis. *Angew. Chem. Int. Ed.* 48, 9477–9480 (2009) [10.1002/anie.200903864](https://doi.org/10.1002/anie.200903864)
35. H.Nakanishi, K.J.M. Bishop, B. Kowalczyk, A. Nitzan, E.A. Weiss, K.V. Tretiakov, M.M. Apodaca, R. Klajn, J.F. Stoddart, B.A. Grzybowski*, Photoconductance and inverse photoconductance in films of functionalized metal nanoparticles. *Nature* 460, 371-375 (2009) [10.1038/nature08131](https://doi.org/10.1038/nature08131)
34. K.J.M. Bishop, C.E. Wilmer, S. Soh, B.A. Grzybowski*, Nanoscale forces and their uses in self-assembly, *Small* 5, 1600-1630 (2009) [10.1002/sml.200900358](https://doi.org/10.1002/sml.200900358)
33. B.A. Grzybowski*, K.J.M. Bishop, B. Kowalczyk, C.E. Wilmer, The 'wired' universe of organic chemistry. *Nature Chem.* 1, 31-36 (2009) [10.1038/nchem.136](https://doi.org/10.1038/nchem.136)
32. G. Mahmud, C.J. Campbell, K.J.M. Bishop, Y.A. Komarova, O. Chaga, S. Soh, S. Huda, K. Kandere-Grzybowska, B.A. Grzybowski*, Directing cell motions on micropatterned ratchets. *Nature Phys.* 5, 606-612 (2009) [10.1038/nphys1306](https://doi.org/10.1038/nphys1306)
31. R. Klajn, P.J. Wesson, K.J.M. Bishop, B.A. Grzybowski*, Writing self-erasing images using metastable nanoparticle 'inks'. *Angew. Chem. Int. Ed.* 48, 7035-7039 (2009) [10.1002/anie.200901119](https://doi.org/10.1002/anie.200901119)
30. B. Kowalczyk, K.J.M. Bishop, S. Smoukov, B.A. Grzybowski*, Synthetic popularity reflects chemical reactivity: Reactivity measures based on the counts of literature-reported reactions. *J Phys. Org. Chem.* 22, 897-902 (2009) [10.1002/poc.1535](https://doi.org/10.1002/poc.1535)
29. P.J. Wesson, S. Soh, R. Klajn, K.J.M. Bishop, T.P. Gray, B.A. Grzybowski*, 'Remote' fabrication via three-dimensional reaction-diffusion: Making complex core-and-shell particles and assembling them into open-lattice crystals. *Adv. Mater.* 21, 1911-1915 (2009) [10.1002/adma.200802964](https://doi.org/10.1002/adma.200802964)
28. B.A. Grzybowski*, C.E. Wilmer, J. Kim, K. Browne, K.J.M. Bishop, Self-assembly: From crystals to cells. *Soft Matter* 5, 1110-1128 (2009) [10.1039/B819321P](https://doi.org/10.1039/B819321P)
27. K.V. Tretiakov, K.J.M. Bishop, B.A. Grzybowski*, The dependence between forces and dissipation rates mediating dynamic self-assembly. *Soft Matter* 5, 1279-1284 (2009) [10.1039/B811254A](https://doi.org/10.1039/B811254A)
26. K.V. Tretiakov, K.J.M. Bishop, B. Kowalczyk, A. Jaiswal, M.A. Poggi, B.A. Grzybowski*, Mechanism of the cooperative adsorption of oppositely charged nanoparticles. *J. Phys. Chem. A* 113, 3799-3803 (2009) [10.1021/jp809447m](https://doi.org/10.1021/jp809447m)
25. B. Kowalczyk, A.M. Kalsin, R. Orlik, K.J.M. Bishop, A.Z. Patashinskii, A. Mitus, B.A. Grzybowski*, Size-selection during crystallization of oppositely charged nanoparticles. *Chem. Eur. J.* 15, 2032-2035 (2009) [10.1002/chem.200990022](https://doi.org/10.1002/chem.200990022)
24. C.J. Campbell, M. Fialkowski, K.J.M. Bishop, B.A. Grzybowski*, Mechanism of reactive wetting and direct visual determination of the kinetics of self-assembled monolayer formation. *Langmuir* 25, 9-12 (2009) [10.1021/la800726p](https://doi.org/10.1021/la800726p)
23. K.J.M. Bishop, B. Kowalczyk, B.A. Grzybowski*, Precipitation of oppositely charged nanoparticles by dilution and/or temperature increase. *J. Phys. Chem. C* 113, 1413-1417 (2009) [10.1021/jp8056493](https://doi.org/10.1021/jp8056493)
22. K.V. Tretiakov, K.J.M. Bishop, B.A. Grzybowski*, Additivity of the excess energy dissipation rate in a dynamically self-assembled system, *J. Phys. Chem. B* 113, 7574-7578 (2009) [10.1021/jp811473q](https://doi.org/10.1021/jp811473q)
21. B.A. Grzybowski*, K.J.M. Bishop, Micro- and nanoprinting into solids using reaction-diffusion etching and hydrogel stamps. *Small* 5, 22-27 (2009) [10.1002/sml.200800914](https://doi.org/10.1002/sml.200800914)

20. S. Soh, K.J.M. Bishop, B.A. Grzybowski*, Dynamic self-assembly in ensembles of camphor boats. *J. Phys. Chem. B* 112, 10848-10853 (2008) [10.1021/jp7111457](https://doi.org/10.1021/jp7111457)
19. G. Mahmud, K.J.M. Bishop, Y. Chegel, S.K. Smoukov, B.A. Grzybowski*, Wet-stamped precipitant gradients control the growth of protein microcrystals in an array of nanoliter wells. *J. Amer. Chem. Soc.* 130, 2146-2147 (2008) [10.1021/ja078051k](https://doi.org/10.1021/ja078051k)
18. S.K. Smoukov, K.J.M. Bishop, B. Kowalczyk, A.M. Kalsin, B.A. Grzybowski*, Electrostatically 'patchy' coatings via cooperative adsorption of charged nanoparticles. *J. Amer. Chem. Soc.* 129, 15623-15630 (2007) [10.1021/ja075456w](https://doi.org/10.1021/ja075456w)
17. K.J.M. Bishop, B.A. Grzybowski*, 'Nanoions': fundamental properties and analytical applications of charged nanoparticles. *ChemPhysChem* 8, 2171-2176 (2007) [10.1002/cphc.200700349](https://doi.org/10.1002/cphc.200700349)
16. R. Klajn[†], K.J.M. Bishop[†], B.A. Grzybowski*, Light-controlled self-assembly of reversible and irreversible nanoparticle suprastructures. *Proc. Natl. Acad. Sci. U.S.A.* 104, 10305-10309 (2007) [10.1073/pnas.0611371104](https://doi.org/10.1073/pnas.0611371104)
15. R. Klajn[†], K.J.M. Bishop[†], M. Fialkowski, M. Paszewski, C.J. Campbell, T.P. Gray, B.A. Grzybowski*, Plastic and moldable metals by self-assembly of sticky nanoparticle aggregates, *Science* 316, 261-264 (2007) [10.1126/science.1139131](https://doi.org/10.1126/science.1139131)
14. K.J.M. Bishop, T.P. Gray, M. Fialkowski, B.A. Grzybowski*, Microchameleons: Nonlinear chemical microsystems for amplification and sensing, *Chaos* 16, 037102 (2006) [10.1063/1.2240142](https://doi.org/10.1063/1.2240142)
13. K.J.M. Bishop, B.A. Grzybowski*, Localized chemical wave emission and mode switching in a patterned excitable medium. *Phys. Rev. Lett.* 97, 128702 (2006) [10.1103/PhysRevLett.97.128702](https://doi.org/10.1103/PhysRevLett.97.128702)
12. A. Kalsin, M. Fialkowski, M. Paszewski, S.K. Smoukov, K.J.M. Bishop, B.A. Grzybowski*, Electrostatic self-assembly of binary nanoparticle crystals with a diamond-like lattice. *Science* 312, 420-424 (2006) [10.1126/science.1125124](https://doi.org/10.1126/science.1125124)
11. C.J. Campbell, S.K. Smoukov, K.J.M. Bishop, B.A. Grzybowski*, Direct printing of 3D and curvilinear micrometer-sized architectures into solid substrates with sub-micrometer resolution. *Adv. Mater.* 18, 2004-2008 (2006) [10.1002/adma.200600716](https://doi.org/10.1002/adma.200600716)
10. K.J.M. Bishop, R. Klajn, B.A. Grzybowski*, The core and most useful molecules in organic chemistry. *Angew. Chem. Int. Ed.* 45, 5348-5354 (2006) [10.1002/anie.200600881](https://doi.org/10.1002/anie.200600881)
9. M. Fialkowski, K.J.M. Bishop, R. Klajn, S.K. Smoukov, C.J. Campbell, B.A. Grzybowski*, Principles and implementations of dissipative (dynamic) self-assembly. *J. Phys. Chem. B* 110, 2482-2496 (2006) [10.1021/jp054153q](https://doi.org/10.1021/jp054153q)
8. M. Fialkowski, K.J.M. Bishop, V.A. Chubukov, C.J. Campbell, B.A. Grzybowski*, Architecture and evolution of organic chemistry. *Angew. Chem. Int. Ed.* 44, 7263-7269 (2005) [10.1002/anie.200502272](https://doi.org/10.1002/anie.200502272)
7. K.J.M. Bishop, M. Fialkowski, B.A. Grzybowski*, Micropatterning chemical oscillations: waves, autofocusing and symmetry breaking. *J. Am. Chem. Soc.* 127, 15943-15948 (2005) [10.1021/ja054851o](https://doi.org/10.1021/ja054851o)
6. B.A. Grzybowski*, K.J.M. Bishop, C.J. Campbell, M. Fialkowski, S.K. Smoukov, Micro- and nanotechnology via reaction-diffusion. *Soft Matter* 1, 114-128 (2005) [10.1039/B501769F](https://doi.org/10.1039/B501769F)
5. C.J. Campbell, S.K. Smoukov, K.J.M. Bishop, B.A. Grzybowski*, Reactive surface micropatterning by wet stamping. *Langmuir* 21, 2637-2640 (2005) [10.1021/la046942p](https://doi.org/10.1021/la046942p)

4. S.K. Smoukov, K.J.M. Bishop, R. Klajn, C.J. Campbell, B.A. Grzybowski*, Cutting into solids with micropatterned gels. *Adv. Mater.* 17, 1361-1365 (2005) [10.1002/adma.200402086](https://doi.org/10.1002/adma.200402086)
3. S.K. Smoukov, K.J.M. Bishop, C.J. Campbell, B.A. Grzybowski*, Freestanding three-dimensional copper foils prepared by electroless deposition on micropatterned gels. *Adv. Mater.* 17, 751-755 (2005) [10.1002/adma.200401010](https://doi.org/10.1002/adma.200401010)
2. R. Klajn, M. Fialkowski, I.T. Bensemann, A. Bitner, C.J. Campbell, K.J.M. Bishop, S. Smoukov, B.A. Grzybowski*, Multicolour micropatterning of thin films of dry gelatin. *Nature Mater.* 3, 729-735 (2004) [10.1038/nmat1231](https://doi.org/10.1038/nmat1231)
1. K.J.M. Bishop, J.P. O'Connell*, Aqueous cross second virial coefficients with the Hayden-O'Connell correlation. *Ind. Eng. Chem. Res.* 44, 630-633 (2005) [10.1021/ie049267n](https://doi.org/10.1021/ie049267n)

* Denotes corresponding author(s)

† Denotes equal contributions

PATENTS

B.A. Grzybowski, K.J.M. Bishop, B. Kowalczyk, C.E. Wilmer, Networks for Organic Reactions and Compounds. [US20180276346A1](https://patents.google.com/patent/US20180276346A1)

B.A. Grzybowski, R. Klajn, P.J. Wesson, K.J.M. Bishop, Metastable nanoparticle ink compositions and images made therefrom. [US8496323B2](https://patents.google.com/patent/US8496323B2)

BOOK CHAPTERS

K.J.M. Bishop, C.J. Campbell, G. Mahmud, B.A. Grzybowski (2008) "Bioinspired Dynamic Self-Assembly" in *Self-Assembly: Interdisciplinary Snapshots*, Oxford: Elsevier.

INVITED LECTURES

27. Louisiana State University, Baton Rouge, LA 2019
26. ACS Colloids and Surface Science Symposium, Keynote Speaker in Active & Responsive Matter, GA Tech, Atlanta, GA, 2019
25. Northwestern University, Department of Physics, Evanston, IL, 2019
24. UC Santa Barbara, Department of Chemical Engineering, Santa Barbara, CA, 2019
23. Radboud University, Research Center for Functional Molecular Systems, Short Course: Out-of-Equilibrium Systems, Nijmegen, Netherlands, 2018
22. Molecules, Materials, Devices and Systems in Medicine, Columbia University, New York, 2019
21. Princeton University, Princeton Institute for the Science and Technology of Materials (PRISM) and the Princeton Center for Complex Materials (PCCM), Princeton, NJ, 2017
20. New York University, Courant Institute of Mathematical Sciences, New York, NY, 2017
19. ACS National Meeting, COLL Division, Responsive, Programmable Assembly of Active Colloids for Functional Materials, Washington, DC, 2017
18. Brookhaven National Laboratory, Center for Functional Nanomaterials, Upton, NY, 2017

17. ACS National Meeting, PMSE and COLL Divisions, Janus Particles: Synthesis, Characterization, and Applications, San Francisco, CA, 2017
16. APS March Meeting, DPOLY Short Course: Polymer Colloids: Synthesis, Characterization and Application, New Orleans, LO, 2017
15. CUNY ASRC, Bio-inspired Nanomaterials Symposium, New York, NY, 2017
14. Northeast Complex Fluids and Soft Matter Workshop (NCS6), Stevens Institute of Technology, Hoboken, NJ, 2017
13. New York University, Department of Chemistry, New York, NY, 2016
12. Rutgers, Department of Chemistry and Chemical Biology, New Brunswick, NJ, 2016
11. Case Western Reserve, Department of Chemical Engineering, Cleveland, OH, 2016
10. University of North Carolina, Department of Applied Physical Sciences, Chapel Hill, NC, 2016
9. Center for Bioinspired Energy Science Research Symposium, Northwestern University, Evanston, IL, 2015
8. University of Maryland, Department of Chemical Engineering, College Park, MD, 2014
7. UC San Diego, Department of NanoEngineering, San Diego, CA, 2014
6. APS Division of Fluid Mechanics, Frontiers in Combustion Physics, Pittsburgh, PA 2013
5. Center for Integrated Nanotechnology, User Conference, Santa Fe, NM 2013
4. École Polytechnique Fédérale de Lausanne, Institute of Chemical Sciences and Engineering, Lausanne, Switzerland, 2013
3. Gordon Research Conference on Self-Assembly and Supramolecular Chemistry, Les Diablerets, Switzerland, 2013
2. Iowa State University, Department of Materials Science and Engineering, Ames, IA, 2012
1. Center for the Chemistry of Integrated Systems (CCIS) Symposium, Northwestern University, Evanston, IL, 2010

CONFERENCE PRESENTATIONS

34. ACS Colloid & Surface Science Symposium, Georgia Tech, Atlanta, GA, 2019
33. APS March Meeting, Boston, MA, 2019
32. AIChE Annual Meeting, Pittsburgh, PA, 2018
31. ACS Colloid & Surface Science Symposium, Pennsylvania State University, University Park, PA, 2018
30. Northeast Complex Fluids and Soft Matter Workshop (NCS8), Columbia University, New York, NY, 2018
29. AIChE Annual Meeting, Minneapolis, MN, 2017
28. ACS National Meeting, Washington, DC, 2017
27. DOE EFRC Principal Investigators' Meeting, Washington, DC 2017
26. ACS Colloid & Surface Science Symposium, City College of New York, New York, NY, 2017
25. APS March Meeting, New Orleans, LA, 2017
24. ACS National Meeting, San Francisco, CA, 2017

23. Gordon Research Conference on Complex Active and Adaptive Material Systems, Ventura, CA, 2017
22. Northeast Complex Fluids and Soft Matter Workshop (NCS6), Stevens Institute of Technology, Hoboken, NJ, 2017
21. AIChE Annual Meeting, San Francisco, CA, 2016
20. AIChE Annual Meeting, Salt Lake City, UT, 2015
19. DOE EFRC Principal Investigators' Meeting, Washington, DC 2015
18. 3M Science and Engineering Faculty Day, Minneapolis, MN, 2015
17. Gordon Research Conference on Self-Assembly and Supramolecular Chemistry, Lucca, Italy, 2015
16. ACS Colloid & Surface Science Symposium, Carnegie Mellon University, Pittsburgh, PA, 2015
15. AIChE Annual Meeting, Atlanta, GA 2014
14. ACS Colloid & Surface Science Symposium, University of Pennsylvania, Philadelphia, PA, 2014
13. Gordon Research Conference on Colloidal, Macromolecular & Polyelectrolyte Solutions, Ventura, CA, 2014
12. AIChE Annual Meeting, San Francisco, CA, 2013
11. APS Division of Fluid Mechanics Annual Meeting, Pittsburgh, PA 2013
10. DOE EFRC Principal Investigators' Meeting, Washington, DC 2013
9. 3M Science and Engineering Faculty Day, Minneapolis, MN, 2013
8. Gordon Research Conference on Self-Assembly and Supramolecular Chemistry, Les Diablerets, Switzerland, 2013
7. AIChE Annual Meeting, Pittsburgh, PA, 2012
6. AIChE Annual Meeting, Minneapolis, MN, 2011
5. AIChE Annual Meeting, Salt Lake City, UT, 2010
5. ACS Colloid & Surface Science Symposium, Columbia University, New York, NY, 2009
4. Gordon Research Conference on Thin Film & Crystal Growth Mechanisms, South Hadley, MA, 2007
3. AIChE Annual Meeting, Salt Lake City, UT, 2007
2. AIChE Annual Meeting, San Francisco, CA, 2006
1. AIChE Annual Meeting, Cincinnati, OH, 2005

STUDENTS AND POSTDOCTORAL ASSOCIATES

GRADUATE STUDENTS

- | | |
|--|-------|
| 12. Zhengyan Zhang, Chemical Engineering | 2018– |
| 11. Dimitri Livitz, Chemical Engineering | 2018– |
| 10. Kiran Dhatt-Gauthier, Chemical Engineering | 2017– |
| 9. Yong Dou, Chemical Engineering | 2015– |
| 8. Yang Gu, Chemical Engineering | 2015– |
| 7. Shashank Pandey, Chemical Engineering | 2014– |

6. Wenjie Fei, Chemical Engineering 2014–
5. Allan Brooks, Chemical Engineering 2014–2016
4. Sabrina Syeda, Chemical Engineering 2012–2017
Shape-directed actuation and collective dynamics of spinners
Intel, Portland, OR
3. Charles Cartier, Chemical Engineering 2012–2017
Contact charge electrophoresis: An electrostatic motor for microfluidics & active matter systems
CNA, Arlington, VA
2. Sun Hae Ra Shin, Chemical Engineering 2010–2015
Adaptive nanoparticle amphiphiles as multifunctional particle surfactants
Post-doc, Sandia National Laboratory
1. Aaron Drews, Chemical Engineering 2009–2014
Ratcheted contact charge electrophoresis
Lecturer PSOE, NanoEngineering, UC San Diego

POSTDOCTORAL ASSOCIATES

5. Dr. Lisa Tran, Soft Matter Physics 2018–
4. Dr. John Schreck, Computational Physics 2016–2019
3. Dr. Mikołaj Kowalik, Computational Physics 2011–2016
National Center for Supercomputing Applications, Urbana-Champaign, IL
2. Dr. Hee-Young Lee, Materials Chemistry 2011–2015
Assistant Professor, Chemical Engineering, Kumoh Natl. Inst. Tech.
1. Dr. Dickson Andala, Materials Chemistry 2010–2011
Lecturer, Chemistry, Kenyatta University

MASTERS STUDENTS

1. Ghanim Hableel, Chemical Engineering 2018–

UNDERGRADUATE STUDENTS

11. Crystal Lee, Chemical Engineering 2019–
10. Peter Tzelios, Chemical Engineering 2018–
9. Varun Hegde, Chemical Engineering 2016–2018
8. Bonnie Hu, Chemical Engineering 2016–2017
7. Olivia Miller, Chemical Engineering 2015–2016
6. Jason Graybill, Chemical Engineering 2014–2016
5. Fernando Lopez, Chemical Engineering (NSF REU) 2015
4. Carly Morrison, Chemical Engineering (NSF REU) 2014
3. Aaron Chirsan, Chemical Engineering 2012–2014
2. Jon Cippel, Chemical Engineering 2012–2013
1. Sean Lewis, Chemical Engineering 2011–2013
Self Assembly of amphiphilic nanoparticles and tubules

COURSES TAUGHT

ChE 4670 Chemical Engineering Data Analysis	FA17, FA18, FA19
ChE 3120 Transport II	SP17, SP18, SP19
ChE 544 General Transport Phenomena	FA12, FA13, FA14, FA15
ChE 230 Computational Tools for Chemical Engineering	SP14, SP15, SP16
ChE 360 Mathematical Modeling in Chemical Engineering	FA11, SP13
ChE 350 Process Heat Transfer	SP11, SP12

UNIVERSITY SERVICE

Chair, Graduate Studies Committee, Department of Chemical Engineering, Columbia University, 2016–

Faculty Advisor, Engineering Advising Center, College of Engineering, Pennsylvania State University, SP15, SP14, FA11

Faculty Advisor, Omega Chi Epsilon, Department of Chemical Engineering, Pennsylvania State University, 2015–2016

Chair, Graduate Studies & Research Committee, College of Engineering, Pennsylvania State University, 2013–2014

OTHER SERVICE

Conference Organizer, 8th Northest Complex Fluids and Soft Matter Workshop (NCS8), Columbia University, 2018, with Karen Kasza

Session Organizer, Electrokinetics, Micropores, and Microfluidics, ACS Colloid and Surface Science Symposium, Georgia Tech, 2019, with Carlos Martinez

Session Organizer, Electrokinetics and Microfluidics, ACS Colloid and Surface Science Symposium, Pennsylvania State University, 2018, with Todd Squires & Sarah Perry

Session Organizer, Electrokinetics and Microfluidics, ACS Colloid and Surface Science Symposium, City College of New York, 2017, with Aditya Khair

Faculty Mentor, Upward Bound Math & Science (UBMS), Summer Experience in the Eberly College of Science (SEECoS), Pennsylvania State University, 2015

Instructor, NanoDays Teachers Workshop, Pennsylvania State University, 2012

Session Chair, Colloidal Dispersions, AIChE Annual Meeting, Salt Lake City, UT, 2015

Session Chair, Self- and Directed Assembly of Molecules and Particles, ACS Colloid & Surface Science Symposium, Carnegie Mellon University, Pittsburgh, PA, 2015

Session Chair, Colloidal Dispersions, AIChE Annual Meeting, Atlanta, GA, 2014

Session Chair, Fabrication of Colloidal Assemblies and Devices, ACS Colloid & Surface Science Symposium, Columbia University, New York, NY, 2009

Peer Reviewer for *ACS Appl Mater Interfaces*, *ACS App Nano Mater*, *ACS Nano*, *ACS Omega*, *Adv Funct Mater*, *Adv Mater*, *Adv Mater Interfaces*, *Anal Chem*, *Angew Chem*, *Biomicrofluidics*, *Chem Comm*, *Chem Eng Sci*, *Chem Mater*, *Chem Rev*, *Chem Sci*, *ChemSusChem*, *Curr Opin Colloid Interface*

Sci, Energy Fuels, J Am Chem Soc, J Chem Phys, J Phys Chem, J Phys Chem Lett, J Poly Sci B, Lab Chip, Langmuir, Macromol Rapid Comm, Nanoscale, Nature Chem, Nature Comm, Nature Mater, Nature Nano, Nature Photonics, Phys Fluid, Phys Lett A, Phys Rev Appl, Phys Rev E, Phys Rev Fluids, Phys Rev Lett, Proc Natl Acad Sci USA, Sci Adv, Sci Robotics, Sci Reports, Small, Soft Matter

MEMBERSHIPS

American Institute of Chemical Engineers (AIChE)

American Chemical Society (ACS)

American Association for the Advancement of Science (AAAS)