KYLE J. M. BISHOP [1]

Professor
Department of Chemical Engineering
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EDUCATION

Northwestern University, Evanston, IL
Ph.D. in Chemical and Biological Engineering — 2009
Advised by Bartosz A. Grzybowski
Dissertation: "Beyond Colloids: Interparticle forces at the nanoscale and their application to self-assembly"

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

APPOINTMENTS

Columbia University, New York, NY
Professor of Chemical Engineering — 2020–
Associate Professor of Chemical Engineering — 2016–2020

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

[1] Prepared August 15, 2023

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

TEACHING EXPERIENCE

CHENE 4010 Math Methods in Chemical Engineering

30 Students	SP24

CHENE 4140 Engineering Separations

22 Students, Course Quality **4.22** / 5.0, Instructor Quality **4.89** / 5.0	FA22

CHENE 4670 Chemical Engineering Data Analysis

29 Students, Course Quality **4.50** / 5.0, Instructor Quality **4.50** / 5.0	SP23
30 Students, Course Quality **3.93** / 5.0, Instructor Quality **4.00** / 5.0	SU21
40 Students, Course Quality **4.48** / 5.0, Instructor Quality **4.70** / 5.0	FA20
24 Students, Course Quality **4.42** / 5.0, Instructor Quality **4.50** / 5.0	FA19
36 Students, Course Quality **4.33** / 5.0, Instructor Quality **4.46** / 5.0	FA18
39 Students, Course Quality **4.53** / 5.0, Instructor Quality **4.37** / 5.0	FA17

CHENE 3120 Transport II

20 Students, Course Quality **3.92** / 5.0, Instructor Quality **4.31** / 5.0	SP22
22 Students, Course Quality **3.91** / 5.0, Instructor Quality **4.27** / 5.0	SP21
32 Students, not available	SP20
38 Students, Course Quality **4.50** / 5.0, Instructor Quality **4.50** / 5.0	SP19
31 Students, Course Quality **4.33** / 5.0, Instructor Quality **4.56** / 5.0	SP18
41 Students, Course Quality **4.46** / 5.0, Instructor Quality **4.54** / 5.0	SP17

CHENE 4002 Essentials of Chemical Engineering B (1 of 4 instructors)

42 Students, not available	FA22
20 Students, not available	FA21
24 Students, Course Quality **4.54** / 5.0, Instructor Quality **4.77** / 5.0	FA20
17 Students, Course Quality **3.45** / 5.0, Instructor Quality **4.67** / 5.0	FA19
24 Students, Course Quality **3.73** / 5.0, Instructor Quality **4.25** / 5.0	FA18
26 Students, Course Quality **4.67** / 5.0, Instructor Quality **4.59** / 5.0	FA17

ChE 544 General Transport Phenomena (Penn State) FA12, FA13, FA14, FA15

ChE 230 Computational Tools for Chemical Engineering (Penn State)	SP14, SP15, SP16
ChE 360 Mathematical Modeling in Chemical Engineering (Penn State)	FA11, SP13
ChE 350 Process Heat Transfer (Penn State)	SP11, SP12

Students and Postdoctoral Associates

Ph.D. Students

17. Katherine Milas, Chemical Engineering 2023–
16. Raghavendra Nimiwal, Chemical Engineering 2021–
15. Yiyang Wu, Chemical Engineering 2021–
14. Nisha Modi, Chemical Engineering 2019–
13. Ghanim Hableel, Chemical Engineering 2019–
12. Dimitri Livitz, Chemical Engineering 2018–2023
    Inference and criticism of dynamical models to accelerate microrobot design
    NoRD Bio, Cambridge, MA
11. Zhengyan Zhang, Chemical Engineering 2018–2023
    Quincke Oscillators: Dynamics, synchronization, assembly of self-oscillating colloids
    Huawei, Shanghai, China
10. Kiran Dhatt-Gauthier, Chemical Engineering 2017–2022
    Bayesian analysis of particle tracking data using hierarchical models for characterization and design
    Bristol Myers Squibb, Lawerence, NJ
9. Yang Gu, Chemical Engineering 2015–2021
    Osmophoresis of lipid vesicles in solute gradients
    10X Genomics, Pleasanton CA
8. Yong Dou, Chemical Engineering 2015–2020
    Colloidal robotics: Autonomous propulsion and navigation of active particles
    Senior Scientist, ASML, San Diego CA
7. Allan Brooks, Chemical Engineering 2014–2019
    Programming the dynamics of active colloids via shape
    Postdoc with Michael Strano, MIT
6. Shashank Pandey, Chemical Engineering 2014–2019
    Contact charge electrophoresis: Cooperative dynamics of particle dispersions
    Intel, Portland OR
5. Wenjie Fei, Chemical Engineering 2014–2019
    Magneto-capillary dynamics of particles at curved liquid interfaces
    Instructor, Environmental Engineering, Texas Tech University
4. Sabrina Syeda, Chemical Engineering 2012–2017
    Shape-directed actuation and collective dynamics of spinners
    Engineer, Intel, Portland OR
3. Charles Cartier, Chemical Engineering 2012–2017
    Contact charge electrophoresis: An electrostatic motor for microfluidics & active matter systems
    Research Scientist, CNA Corporation, Arlington VA

2. Sun Hae Ra Shin, Chemical Engineering 2010−2015
Adaptive nanoparticle amphiphiles as multifunctional particle surfactants
Scientist, Pacific Northwest National Laboratory

1. Aaron Drews, Chemical Engineering 2009−2014
Ratcheted contact charge electrophoresis
Associate Teaching Professor, NanoEngineering, UC San Diego

POSTDOCTORAL ASSOCIATES

5. Dr. Lisa Tran, Soft Matter Physics 2018−2020
Assistant Professor, Physics, Utrecht University

4. Dr. John Schreck, Computational Physics 2016−2019
Machine Learning Scientist, National Center for Atmospheric Research

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
Professor, Chemical Engineering, Kumoh Natl. Inst. Tech.

1. Dr. Dickson Andala, Materials Chemistry 2010−2011
Professor, Materials Chemistry, Kenyatta University

M.S. STUDENTS

5. Cindy Li, Chemical Engineering 2023−2024

4. Siwei Chen, Chemical Engineering 2021−2022

3. Paritosh Kulkarni, Chemical Engineering 2020−2021

2. Jiayu Zhang, Chemical Engineering 2019−2021

1. Ghanim Hableel, Chemical Engineering 2018−2019

UNDERGRADUATE STUDENTS

14. April Ramos, Chemistry, Barnard College 2023−

13. Imelda Naa Ayorkor, Biomedical Engineering 2022−2023

12. Briana Franco, Chemical Engineering 2022−2023

11. Crystal Lee, Chemical Engineering 2019−2021

10. Peter Tzelios, Chemical Engineering 2018−2021

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

Awards of Students & Postdocs

10. Lisa Tran, Simons Junior Fellow, 2018-2021
9. Ghanim Hableel, Société de Chimie Industrielle, Chemical Engineering Summer Research Program at Columbia University, 2019
8. Bonnie Hu, Société de Chimie Industrielle, Chemical Engineering Summer Research Program at Columbia University, 2018
7. Allan Brooks, NSG Graduate Research Fellowship, 2016-2019
6. Allan Brooks, Best Candidacy Exam Award, Penn State Chemical Engineering, 2015
5. Charles Cartier, Personal Excellence Award, Penn State Chemical Engineering, 2015
4. Charles Cartier, Best Poster, Penn State College of Engineering Research Symposium, 2014
3. Aaron Drews, Graduate Fellowship, Air Products Corporation, 2013
2. Aaron Drews, Personal Excellence Award, Penn State Chemical Engineering, 2012
1. Aaron Drews, Best Presentation, AIChE Annual Meeting, Colloidal Hydrodynamics session, 2012

Peer Reviewed Publications

Dr. Bishop has an *h*-index of 47 and a total of 10,084 citations; citation statistics were obtained from Google Scholar on March 5, 2024. Underlined names represent supervised students and post-docs.

102. J.L. Barrat *et al.* Soft matter roadmap. ***J. Phys. Mater.*** 7, 012501 (2023) 10.1088/2515-7639/ad06cc
101. D.V. Fraga Alvarez, D. Livitz, X. Pang, N. Mahmud, K.J.M. Bishop, M.H. El-Naas, D.V. Esposito Alkalinity Enhancement during Reject Brine Electrolysis: Role of Electrocatalyst Placement on the Outer Surfaces of Porous Flow-Through Electrodes. ***ACS Sustainable Chem. Eng.*** 11, 15620–15631 (2023) 10.1021/acssuschemeng.3c04288
100. D. Livitz, K. Dhatt-Gauthier, K.J.M. Bishop*, Magneto-capillary particle dynamics at curved interfaces: inference and criticism of dynamical models. ***Soft Matter*** 19, 9017-9026 (2023) 10.1039/D3SM01256E
99. Z. Zhang, K.J.M. Bishop*, Synchronization and alignment of model oscillators based on Quincke rotation. ***Phys. Rev. E*** 107, 054603 (2023) 10.1103/PhysRevE.107.054603
98 K.J.M. Bishop*, S.L. Biswal, B. Bharti, Active colloids as models, materials, and machines. ***Annu. Rev. Chem. Biomol. Eng.*** 14, 1–30 (2023) 10.1146/annurev-chembioeng-101121-084939
97. N. Modi, S. Chen, I.N. A. Adjei, B.L. Franco, K.J.M. Bishop*, A.C. Obermeyer*, Designing negative feedback loops in enzymatic coacervate droplets. ***Chem. Sci.*** in press (2023) 10.1039/d2sc03838b
96. K. Dhatt-Gauther, D. Livitz, Y. Wu, K.J.M. Bishop*, Accelerating the design of self-guided microrobots in time-varying magnetic fields. ***JACS Au*** 3, 611–627 (2023) [invited *Perspective*] 10.1021/jacsau.2c00499

95. Y. Gu, L. Tran, S. Lee, J. Zhang, K.J.M. Bishop*, Convection confounds measurements of osmophoresis for lipid vesicles in solute gradients. ***Langmuir*** 39, 942–948 (2023) 10.1021/acs.langmuir.2c02040

94. K.J.M. Bishop*, Hierarchical Assembly: Self-assembly across scales. ***Nat. Mater.*** 21, 501–502 (2022) 10.1038/s41563-022-01235-z

93. A. Sharko†, D. Livitz,† S. De Piccoli, K.J.M. Bishop*, T.M. Hermans*, Insights into chemically-fueled supramolecular polymers. ***Chem. Rev.*** 122, 11759-11777 (2022) 10.1021/acs.chemrev.1c00958

92. K. Dhatt-Gathier, D. Livitz, K.J.M. Bishop*, Automating Bayesian inference and design for acoustic levitation and propulsion. ***Soft Matter*** 17, 10128-10139 (2021) 10.1039/D1SM01116B

91. Z. Zhang, H. Yuan, Y. Dou, M. Olvera de la Cruz*, K.J.M. Bishop*, Quincke oscillations of colloids at planar electrodes. ***Phys. Rev. Lett.*** 126, 258001 (2021) 10.1103/PhysRevLett.126.258001

90. G. Zhu*, M.D. Hannel, R. Sha, F. Zhao, M.Y. Ben Zion, Y. Zhang, K.J.M. Bishop, D.G. Grier, N.C. Seeman*, P.M. Chaikin*, Microchemomechanical devices using DNA hybridization. ***Proc. Nat. Acad. Sci. U.S.A.*** 118, e2023508118 (2021) 10.1073/pnas.2023508118

89. J.G. Lee, A. Al Harraqa, K.J.M. Bishop, B. Bharti*, Fabrication and electric field-driven active propulsion of patchy microellipsoids. ***J. Phys. Chem. B*** 125, 4232–4240 (2021) 10.1021/acs.jpcb.1c01644

88. Y. Dou, P. M. Tzelios, D. Livitz**,** K.J.M. Bishop*, Programmable topotaxis of magnetic rollers in time-varying fields. ***Soft Matter*** 17, 1538-1547 (2021) 10.1039/D0SM01443E

87. S.M.H. Hashemi Amrei, G.H. Miller*, K.J.M. Bishop*, W.D. Ristenpart*, A perturbation solution to the full Poisson-Nernst-Planck equations yields an asymmetric rectified electric field. ***Soft Matter*** 16, 7052-7062 (2020) 10.1039/D0SM00417K

86. L. Tran*, K.J.M. Bishop, Swelling cholesteric liquid crystal shells to direct nanoparticles at the interface. ***ACS Nano*** 14, 5459–5467 (2020) 10.1021/acsnano.9b09441

85. W. Fei, P. M. Tzelios, K.J.M. Bishop*, Magneto-capillary particle dynamics at curved interfaces: Time-varying fields and drop mixing. ***Langmuir*** 36, 6977-6983 (2020) 10.1021/acs.langmuir.9b03119

84. Y. Dou, K.J.M. Bishop*, Autonomous navigation of shape-shifting microswimmers. ***Phys. Rev. Res.*** 1, 032030(R) (2019) 10.1103/PhysRevResearch.1.032030

83. K.J.M. Bishop*, Mobile micromachines: The shape of things to come. ***Nat. Mater.*** 18, 1146-1147 (2019) 10.1038/s41563-019-0519-9

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. ***Nat. Commun.*** 10, 2575 (2019) 10.1038/s41467-019-10579-1

81. J.S. Schreck*, C.W. Coley, K.J.M. Bishop*, Learning retrosynthetic planning through simulated experience. ***ACS Central Sci.*** 5, 970-981 (2019) 10.1021/acscentsci.9b00055

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

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.*** 23, 28-40 (2019) 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
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
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
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
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
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
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
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
70. K.J.M. Bishop*, Acoustic Metamaterials: Living Bandgaps. ***Nat. Mater.*** 16, 786–787 (2017) 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
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
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
66. M. Kowalik, K.J.M. Bishop*, Ratcheted electrophoresis of Brownian particles. ***Appl. Phys. Lett.*** 108, 203103 (2016) 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
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
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
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

61. K.J.M. Bishop*, Nanoscale self-assembly: Seeing is understanding. ***ACS Cent. Sci.*** 1, 16–17 (2015) 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

59. L. Cademartiri*, K.J.M. Bishop, Programmable self-assembly. ***Nat. Mater.*** 14, 2-9 (2015) 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

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

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

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

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

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

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

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

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

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

48. L. Cademartiri, G. Geurin, K.J.M. Bishop, M.A. Winnik*, G.A. Ozin*, Polymer-like conformation and growth kinetics of Bi_2S_3 nanowires. ***J. Am. Chem. Soc.*** 134, 9327-9334 (2012) 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

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

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. ***Nat. Mater.*** 11, 227-232 (2012) 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. ***Nat. Nano.*** 6, 740-746 (2011) 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

42. C. Stan, S. Tang, K.J.M. Bishop, G.M. Whitesides*, Externally-applied electric fields up to 1.6×10^5 V/m do not affect the homogeneous nucleation of ice in supercooled water. ***J. Phys. Chem. B*** 115, 1089–1097 (2011) 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

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

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

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

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

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

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

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/smll.200900358

33. B.A. Grzybowski*, K.J.M. Bishop, B. Kowalczyk, C.E. Wilmer, The 'wired' universe of organic chemistry. ***Nat. Chem.*** 1, 31-36 (2009) 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. ***Nat. Phys.*** 5, 606-612 (2009) 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

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

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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/smll.200800914
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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
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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
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
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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
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
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
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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

* 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

B.A. Grzybowski, R. Klajn, P.J. Wesson, K.J.M. Bishop, Metastable nanoparticle ink compositions and images made therefrom. US8496323B2

Book Chapters

P. M. Tzelios, K.J.M. Bishop (2023) Patterns that persist: Heritable information in stochastic dynamics. in "Conflicting Models for the Origin of Life" S.K. Smoukov, J. Seckbach, and R. Gordon (eds.) Wiley-Scrivener 10.1002/9781119555568.ch8

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

45. Colorado School of Mines, Department of Chemical Engineering, Golden, CO 2024
44. New York University, Center for Soft Matter Research, New York, NY, 2023
43. Gordon Research Conference on Self-Assembly and Supermolecular Chemistry, Les Diablerets, Switzerland, 2023
42. U Mass, Physics, Condensed Matter Seminar, Amherst, MA, 2022
41. Gordon Research Symposium on Colloidal, Macromolecular & Polyelectrolyte Solutions, Ventura, CA, 2022
40. Vanderbilt University, VINSE Colloquium, Nashville, TN, 2022
39. Columbia Workshop on Molecules, Materials, Devices, and Systems in Medicine, New York, 2022
38. Simons Center Workshop on Geometry, Topology, and Symmetry in Soft and Living Matter, Stony Brook, NY, 2022
37. New York University, Applied Math Seminar, New York, NY, 2022
36. University of Florida, Gainesville, Department of Chemical Engineering, Gainesville, FL, 2022
35. Emergence Seminar, Columbia University, Chemical Engineering, New York, NY, 2022
34. University of Colorado, Boulder, Department of Chemical Engineering, Boulder, CA, 2021
33. Systems Chemistry Virtual Symposium, 2021, co-organized by Université de Strasbourg (Virtual)
32. Brown University, Fluids Seminar, Providence, RI, 2021 (Virtual)
31. Arizona State University, Department of Chemical Engineering, Pheonix, AZ, 2020 (Virtual)
30. ETH Zurich, Laboratory for Soft Materials and Interfaces, 2020 (Virtual)
29. Gordon Research Conference on Colloidal, Macromolecular & Polyelectrolyte Solutions, Ventura, CA, 2020
28. Louisiana State University, Department of Chemical Engineering, Baton Rouge, LA 2019
27. ACS Colloids and Surface Science Symposium, Keynote Speaker in Active & Responsive Matter, GA Tech, Atlanta, GA, 2019
26. New York University, Center for Soft Matter Research, New York, NY, 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, Aimes, IA, 2012
1. Center for the Chemistry of Integrated Systems (CCIS) Symposium, Northwestern University, Evanston, IL, 2010

Conference Presentations by Bishop Group Members

44. Gordon Research Conference on Colloidal, Macromolecular & Polyelectrolyte Solutions, Ventura, CA, 2024
43. AIChE Annual Meeting, Orlando, FL, 2023
42. ACS Colloid & Surface Science Symposium, NC State University, Raleigh, NC, 2023
41. Gordon Research Conference on Colloidal, Macromolecular & Polyelectrolyte Solutions, Ventura, CA, 2022
40. APS March Meeting, Chicago, IL, 2022

39. AIChE Annual Meeting, Boston, MA, 2021
38. ACS Spring Meeting, Virtual, 2021
37. APS March Meeting, Denver, CO, 2020 (Virtual)
36. Gordon Research Conference on Colloidal, Macromolecular & Polyelectrolyte Solutions, Ventura, CA, 2020
35. AICHE Annual Meeting, Orlando, FL, 2019
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

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

Victor K. LaMer Award Committee Chair, ACS Colloids and Surface Science Symposium, 2023–

Victor K. LaMer Award Committee, ACS Colloids and Surface Science Symposium, 2020–2022

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)