

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

Edward and Carole Kim Faculty Involvement Award, Columbia University 2022

NSF CAREER Award 2013

3M Non-Tenured Faculty Award 2012–2014

Outstanding Graduate Student Award, Northwestern University 2008

¹ Prepared April 3, 2026

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

TEACHING EXPERIENCE

CHENE 4110 Mechanisms of Transport	
31 Students, Course Quality 2.88 / 5.0, Instructor Quality 3.35 / 5.0	FA25
CHENE 4010 Math Methods in Chemical Engineering	
27 Students, Course Quality 4.07 / 5.0, Instructor Quality 4.57 / 5.0	SP25
26 Students, Course Quality 4.44 / 5.0, Instructor Quality 4.78 / 5.0	SP24
CHENE 4670 Chemical Engineering Data Analysis	
11 Students, Course Quality N/A, Instructor Quality N/A	SP26
33 Students, Course Quality 4.27 / 5.0, Instructor Quality 4.55 / 5.0	FA24
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 4140 Engineering Separations	
22 Students, Course Quality 4.22 / 5.0, Instructor Quality 4.89 / 5.0	FA22
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

16. Femke Janssen, Chemical Engineering (with Allie Obermeyer)	2024–
15. Raghavendra Nimiwal, Chemical Engineering (with Sanat Kumar)	2021–
14. Yiyang Wu, Chemical Engineering	2021–
13. Nisha Modi, Chemical Engineering (with Allie Obermeyer) <i>Engineering pH-responsive coacervates as in vitro models of endogenous condensates under non-equilibrium conditions</i> Merck, New York, NY	2019–2024
12. Dimitri Livitz, Chemical Engineering <i>Inference and criticism of dynamical models to accelerate microrobot design</i> NoRD Bio, Cambridge, MA	2018–2023
11. Zhengyan Zhang, Chemical Engineering <i>Quincke Oscillators: Dynamics, synchronization, assembly of self-oscillating colloids</i> Huawei, Shanghai, China	2018–2023
10. Kiran Dhatt-Gauthier, Chemical Engineering <i>Bayesian analysis of particle tracking data using hierarchical models for characterization and design</i> Ramp Business Corporation, New York, NY	2017–2022
9. Yang Gu, Chemical Engineering <i>Osmophoresis of lipid vesicles in solute gradients</i> 10X Genomics, Pleasanton CA	2015–2021
8. Yong Dou, Chemical Engineering <i>Colloidal robotics: Autonomous propulsion and navigation of active particles</i> Senior Scientist, ASML, San Diego CA	2015–2020
7. Ada Brooks, Chemical Engineering <i>Programming the dynamics of active colloids via shape</i> Postdoc with Michael Strano, MIT	2014–2019
6. Shashank Pandey, Chemical Engineering <i>Contact charge electrophoresis: Cooperative dynamics of particle dispersions</i>	2014–2019

- 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

8. Xiaoxian Deng, Chemical Engineering 2025–2026
7. Katherine Milas, Chemical Engineering 2023–2024
6. Ghanim Hableel, Chemical Engineering 2019–2024
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

15. Simon Nemeh, Chemical Engineering 2026–
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 49 and a total of 11,671 citations; citation statistics were obtained from Google Scholar on April 3, 2026. Underlined names represent supervised students and post-docs.

109. D. Livitz, K. Dhatt-Gauthier, K.J.M. Bishop*, Magneto-capillary dynamics of Janus ellipsoids for droplet propulsion. *Langmuir* in revision (2026)
108. A. Raghu, K.J.M. Bishop*, B. Bharti*, Steady rotation and wall-mediated dynamics of magnetic Janus particles in oscillating fields. *Soft Matter* in press (2026) [10.1039/D5SM01257K](https://doi.org/10.1039/D5SM01257K)

107. S.G. Leyva, Z. Zhang, M. Olvera de la Cruz*, K.J.M. Bishop*, Self-oscillating synchronemetic colloids. *Nat. Commun.* 17, 1841 (2026) [10.1038/s41467-026-68552-8](https://doi.org/10.1038/s41467-026-68552-8)
106. N. Modi, R. Nimiwal, J. Liao, Y. Li, K.J.M. Bishop*, A.C. Obermeyer*, Transient pH changes drive vacuole formation in enzyme-polymer condensates. *Nat. Chem. Eng.* 3, 47–56 (2026) [10.1038/s44286-025-00322-7](https://doi.org/10.1038/s44286-025-00322-7)
105. Y. Wu, G. Chen, A. Ramos, K.J.M. Bishop*, Programmable rheotaxis of magnetic rollers in time-varying fields. *Soft Matter* 21, 7344–7353 (2025) [10.1039/D5SM00682A](https://doi.org/10.1039/D5SM00682A)
104. Y. Wu, A. Ramos, K.J.M. Bishop*, Self-Guided Navigation of Magnetic Microspheres on Topographic Landscapes. *ACS Appl. Eng. Mater.* 2, 2479–2487 (2024) [10.1021/acsaenm.4c00471](https://doi.org/10.1021/acsaenm.4c00471)
103. D. Velegol, K.J.M. Bishop, Analyzing Sequential Betting with a Kelly-Inspired Convective-Diffusion Equation. *Entropy* 26, 600 (2024) [10.3390/e26070600](https://doi.org/10.3390/e26070600)
102. J.L. Barrat *et al.* Soft matter roadmap. *J. Phys. Mater.* 7, 012501 (2023) [10.1088/2515-7639/ad06cc](https://doi.org/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](https://doi.org/10.1021/acssuschemeng.3c04288)
100. D. Livitz, K. Dhath-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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1039/d2sc03838b)
96. K. Dhath-Gauthier, 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1021/acs.chemrev.1c00958)
92. K. Dhath-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](https://doi.org/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](https://doi.org/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](https://doi.org/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.jpcc.1c01644](https://doi.org/10.1021/acs.jpcc.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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](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.* 23, 28–40 (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. *Nat. Mater.* 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. *Nat. 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)
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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)
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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)

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7. K.J.M. Bishop, M. Fiałkowski, 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. Fiałkowski, 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. Fiałkowski, 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. *Nat. 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

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](https://doi.org/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

52. Additive Manufacturing across Length Scales for Active, Adaptive, and Responsive Matter, MRS Fall Meeting, Boston, MA 2026
51. Gordon Research Conference on Oscillations and Dynamic Instabilities in Chemical Systems, Les Diablerets, Switzerland, 2026 [declined]
50. CREST-IDEALS Frontiers In Low-dimensional Materials Symposium (FILMS), City College, NY, October, 2025
49. Penn State University, Department of Chemical Engineering, State College, PA, 2025
48. Stimuli-Responsive Smart Materials for Intelligent Systems, MRS Spring Meeting, Seattle, WA 2025 [declined]
47. Living Soft Matter (A. Crosby & S. Kumar), APS March Meeting, Anaheim, CA 2025
46. Plenary in AIChE Area 01C Interfacial Phenomenon, AIChE Annual Meeting, San Diego, CA 2024
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 Supramolecular 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, Phoenix, 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, Ames, IA, 2012
1. Center for the Chemistry of Integrated Systems (CCIS) Symposium, Northwestern University, Evanston, IL, 2010

CONFERENCE PRESENTATIONS BY BISHOP GROUP MEMBERS

46. APS March Meeting, Anaheim, CA, 2025
45. AIChE Annual Meeting, San Diego, CA, 2024

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, External Affairs Committee, Department of Chemical Engineering, Columbia University, 2024–

Chair, Faculty Search Committee, Department of Chemical Engineering, Columbia University, 2024–2025

Chair, Graduate Studies Committee, Department of Chemical Engineering, Columbia University, 2016–2024

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, 2023–2025

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

Conference Organizer, 8th Northeast 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*

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