

Sangwoo Shin

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CURRENT POSITION	University at Buffalo, The State University of New York , Buffalo, NY Assistant Professor , Department of Mechanical and Aerospace Engineering	
EDUCATION	Yonsei University , Seoul, Korea Ph.D., Mechanical Engineering, 2012 <ul style="list-style-type: none">• Heat/mass transfer, Energy management, Nanomaterials, Nanofluidics• Thesis: <i>Thermal Management of Energy Devices using Nanostructured Materials</i>• Advisor: Hyung Hee Cho B.S., Mechanical Engineering, 2005	
PROFESSIONAL EXPERIENCE	Assistant Professor Department of Mechanical and Aerospace Engineering, University at Buffalo, The State University of New York	2021–current
	Assistant Professor Department of Mechanical Engineering, University of Hawaii at Manoa	2017–2021
	Postdoctoral Research Associate Department of Mechanical and Aerospace Engineering, Princeton University (Supervisor: Howard A. Stone)	2013–2016
	Postdoctoral Research Associate Low Observable Research Center, Yonsei University (Supervisor: Hyung Hee Cho)	2012–2013
REFEREED JOURNAL PUBLICATIONS	Google Scholar profile: https://scholar.google.com/citations?user=ZNZtyqcAAAAJ (* denotes equal contribution; underline denotes advisees) <ol style="list-style-type: none">1. <u>V. S. Doan</u>, D. Kim, C. Snoeyink, Y. Sun & S. Shin, Shape- and orientation-dependent diffusiophoresis of colloidal ellipsoids, <i>Phys. Rev. E</i>, in press.2. S. Shin, Directed colloidal assembly and banding via DC electrokinetics, <i>Biomicrofluidics</i>, in press. (<i>Invited Perspective</i>)3. C. T. Nguyen, E.-H. Cho, B. Gu, S. Lee, H. S. Kim, J. Park, N.-K. Yu, S. Shin, B. Shong, J. Y. Lee & H.-B.-R. Lee, Gradient area-selective deposition for seamless gap-filling in 3D nanostructures through surface chemical reactivity control, <i>Nature Commun.</i>, 13 7597 (2022).4. J. B. Lynch, N. James, M. McFall-Ngai, E. G. Ruby, S. Shin & D. Takagi, Transitioning to confined spaces impacts bacterial swimming and escape response, <i>Biophys. J.</i> 121 2653–2662 (2022). (<i>Featured in Phys.org.</i>)5. <u>V. S. Doan</u> & S. Shin, Formation of a colloidal band via pH-dependent electrokinetics, <i>Electrophoresis</i>, 42 2356–2364 (2021).	

6. V. S. Doan, S. G. Chun, J. Feng, & **S. Shin**, Confinement-dependent diffusiophoretic transport of nanoparticles in collagen hydrogels, *Nano Lett.*, **21** 7625–7630 (2021).
7. S. Yasmeen, J. Yoon, C. H. Moon, R. Khan, H. Gaiji, **S. Shin**, I.-K. Oh & H.-B.-R. Lee, Self-formation of superhydrophobic surfaces through interfacial energy engineering between liquid and particles, *Langmuir*, **37** 5356–5363 (2021).
8. S. w. Park, H. Yoon, J. Lee & **S. Shin**, Microfluidic investigation of salinity-induced oil transport in porous media during chemical flooding, *Energy Fuels*, **35** 4885–4892 (2021).
9. T.-H. Kim, M. Cho & **S. Shin**, Constrained mixed-variable design optimization based on particle swarm optimizer with a diversity classifier for cyclically neighboring subpopulations, *Mathematics*, **8** 2016 (2020).
10. V. S. Doan, P. Saingam, T. Yan & **S. Shin**, A trace amount of surfactants enables diffusiophoretic swimming of bacteria, *ACS Nano*, **14** 14219–14227 (2020).
11. **S. Shin**, Diffusiophoretic separation of colloids in microfluidic flows, *Phys. Fluids*, **32** 101302 (2020). (*Invited*)
12. V. Kumar, **S. Shin** & J. Feng, Light-induced explosion of lipid vesicles, *Soft Matter*, **16** 8904–8911 (2020).
13. T. J. Shimokusu, V. G. Maybruck, J. T. Ault & **S. Shin**, Colloid separation by CO₂-induced diffusiophoresis, *Langmuir*, **36** 7032–7038 (2020). (*Invited*)
14. **S. Shin**, J. T. Ault, K. Toda-Peters & A. Q. Shen, Particle trapping in merging flow junctions by fluid–solute–colloid–boundary interactions, *Phys. Rev. Fluids*, **5** 024304 (2020).
15. **S. Shin**, V. S. Doan & J. Feng, Osmotic delivery and release of lipid-encapsulated molecules via sequential solution exchange, *Phys. Rev. Appl.*, **12** 024014 (2019).
16. S. Battat, J. T. Ault, **S. Shin**, S. Khodaparast & H. A. Stone, Particle entrainment in dead-end pores by diffusiophoresis, *Soft Matter*, **15** 3879–3885 (2019).
17. J. T. Ault, **S. Shin** & H. A. Stone, Characterization of surface-solute interactions by diffusioosmosis, *Soft Matter*, **15** 1582–1596 (2019).
18. P. B. Warren, **S. Shin** & H. A. Stone, Diffusiophoresis in ionic surfactants: effect of micellization, *Soft Matter*, **15** 278–288 (2019).
19. J. T. Ault, **S. Shin** & H. A. Stone, Diffusiophoresis of colloidal particles in narrow channel flows, *J. Fluid Mech.*, **854**, 420–448 (2018).
20. **S. Shin**^{*}, G. Choi^{*}, B. Rallabandi, D. Lee, D. I. Shim, B. S. Kim, K. M. Kim & H. H. Cho, Enhanced boiling heat transfer using self-actuated nano-bimorphs, *Nano Lett.*, **18**, 6392–6396 (2018). (*Featured in Phys.org.*)
21. F. Yang, **S. Shin** & H. A. Stone, Diffusiophoresis of a charged drop, *J. Fluid Mech.* **852**, 37–59 (2018).
22. Z. Zheng^{*}, M. A. Fontelos^{*}, **S. Shin** & H. A. Stone, Universality in the nonlinear leveling of capillary films, *Phys. Rev. Fluids (Rapid Commun.)* **9** 032001(R) (2018).
23. **S. Shin**, P. B. Warren & H. A. Stone, Cleaning by surfactant gradients: Particulate removal from porous materials and the significance of rinsing in fabric cleaning, *Phys. Rev. Appl.* **9** 034012 (2018). (*Featured in Physics, Cosmos, Physics World, New Scientist.*)

24. N. A. Hynson, K. L. Frank, R. A. Alegado, A. S. Amend, M. Arif, G. M. Bennett, A. J. Jani, M. C. I. Medeiros, Y. Mileyko, C. E. Nelson, N. H. Nguyen, O. D. Nigro, S. Priscic, **S. Shin**, D. Takagi, S. T. Wilson & J. Y. Yew, Synergy among microbiota and their hosts: Leveraging the Hawaiian archipelago and local collaborative networks to address pressing questions in microbiome research, *mSystems* **3**, e00159-17 (2018).
25. Z. Zheng*, M. A. Fontelos*, **S. Shin**, M. C. Dallaston, D. Tseluiko, S. Kalliadasis & H. A. Stone, Healing capillary films, *J. Fluid Mech.* **838**, 404–434 (2018).
26. D. Lee, B. S. Kim, H. Moon, N. Lee, **S. Shin** & H. H. Cho, Enhanced boiling heat transfer on nanowire-forested surfaces under subcooling conditions, *Int. J. Heat Mass Transf.* **120** 1020–1030 (2018).
27. J. T. Ault, **S. Shin**, P. B. Warren & H. A. Stone, Diffusiophoresis in one-dimensional solute gradients, *Soft Matter* **13** 9015–9023 (2017).
28. **S. Shin**, J. T. Ault, P. B. Warren & H. A. Stone, Accumulation of colloidal particles in flow junctions induced by fluid flow and diffusiophoresis, *Phys. Rev. X* **7** 041038 (2017). (*Featured in Phys.org.*)
29. F. Boulogne, **S. Shin**, J. Dervaux, L. Limat & H. A. Stone, Diffusiophoretic manipulation of particles in a drop deposited on a hydrogel, *Soft Matter* **13** 5122–5129 (2017).
30. **S. Shin**, J. T. Ault, J. Feng, P. B. Warren & H. A. Stone, Low-cost zeta potentiometry using diffusiophoresis, *Adv. Mater.* **29** 1701516 (2017).
31. **S. Shin***, O. Shardt*, P. B. Warren & H. A. Stone, Membraneless water filtration using CO₂, *Nature Commun.* **8** 15181 (2017). (*Highlighted in Nature, Nature Reviews Chemistry. Featured in The Economist.*)
32. J. Lee, **S. Shin**, Y. Jiang, C. Jeong, H. A. Stone & C.-H. Choi, Oil-Impregnated nanoporous oxide layer for corrosion protection with self-healing, *Adv. Funct. Mater.* **27** 1606040 (2017). (*Selected as the front cover*)
33. **S. Shin**, E. Um, B. Sabass, J. T. Ault, M. Rahimi, P. B. Warren & H. A. Stone, Size-dependent control of colloid transport in dead-end channels via solute gradients, *Proc. Natl. Acad. Sci. U.S.A.* **113**, 257–261 (2016).
34. J. T. Ault, A. Fani, K. K. Chen, **S. Shin**, F. Gallaire & H. A. Stone, Vortex-breakdown induced particle capture in branching junctions, *Phys. Rev. Lett.* **117**, 084501 (2016).
35. J. Feng, J. K. Nunes, **S. Shin**, J. Yan, S. D. Stoyanov, L. N. Arnaudov, Y. L. Kong & H. A. Stone, A scalable platform for functional nanoemulsions via bubble bursting, *Adv. Mater.* **28**, 4047 (2016).
36. **S. Shin**, I. Jacobi & H. A. Stone, Bénard-Marangoni instability driven by moisture absorption, *EPL* **113**, 24002 (2016).
37. B. S. Kim, G. Choi, **S. Shin**, T. Gemming & H. H. Cho, Nano-inspired fluidic interactivity for boiling heat transfer: impact and criteria, *Sci. Rep.* **6**, 34348 (2016).
38. Z. Zheng, **S. Shin** & H. A. Stone, Converging gravity currents over a permeable substrate, *J. Fluid Mech.* **778**, 669–690 (2015).
39. **S. Shin***, J. T. Ault* & H. A. Stone, Flow-driven rapid vesicle fusion via vortex trapping, *Langmuir* **31**, 7178–7182 (2015).

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41. C.-S. Park, M.-H. Hong, **S. Shin**, H. H. Cho & H.-H. Park, Synthesis of mesoporous $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ thin films for thermoelectric materials, *J. Alloy Compd.* **632**, 246–250 (2015).
42. H. Moon, K. M. Kim, Y. H. Jeon, **S. Shin**, J. S. Park & H. H. Cho, Effect of thermal stress on creep lifetime for a gas turbine combustion liner, *Eng. Fail. Anal.* **47**, 34–40 (2015).
43. **S. Shin**^{*}, T. T. Al-Housseiny^{*}, B. S. Kim, H. H. Cho & H. A. Stone, The race of nanowires: morphological instabilities and a control strategy, *Nano Lett.* **14**, 4395–4399 (2014). (*Highlighted in Science – Editors’ Choice*)
44. G. Choi, B. S. Kim, H. Lee, **S. Shin** & H. H. Cho, Jet impingement in a crossflow configuration: Convective boiling and local heat transfer characteristics, *Int. J. Heat Fluid Flow* **50**, 378–385 (2014).
45. B. S. Kim, H. Lee, **S. Shin**, G. Choi & H. H. Cho, Interfacial wicking dynamics and its impact on critical heat flux of boiling heat transfer, *Appl. Phys. Lett.* **105**, 191601 (2014).
46. **S. Shin**^{*}, G. Choi^{*}, B. S. Kim & H. H. Cho, Flow boiling heat transfer on nanowire-coated surfaces with highly wetting liquid, *Energy* **76**, 428–435 (2014).
47. B. S. Kim, **S. Shin**, D. Lee, G. Choi, K. M. Kim & H. H. Cho, Stable and uniform heat dissipation by nucleate-catalytic nanowires for boiling heat transfer, *Int. J. Heat Mass Transf.* **70**, 23–32 (2014).
48. **S. Shin** & H. H. Cho, Self-formed platform for in situ measurement of electrical resistance of individual Cu nanowires, *Electrochim. Acta* **117**, 120–126 (2014).
49. H. Choi, J. H. Baek, T. H. Kim, J. Y. Song, **S. Shin**, H. H. Cho, D.-H. Ko, J. Kim, K. H. Jeong & M.-H. Cho, Effect of phonon scattering by atomically aligned Te layers in self-ordered Sb_2Te_2 films, *J. Mater. Chem. C* **1**, 7043–7053 (2013).
50. S. Cho, J. H. Kim, H. K. Cho, **S. Shin** & H. H. Cho, All-solution-processed $\text{InGaO}_3(\text{ZnO})_m$ thin films with layered structure, *J. Nanomater.* **2013**, 909786 (2013).
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52. M.-H. Hong, C.-S. Park, **S. Shin**, H. H. Cho, W.-S. Seo, Y. S. Lim, J.-K. Lee & H.-H. Park, Effect of surfactant concentration on the thermoelectric properties of mesoporous ZnO thin films, *J. Nanomater.* **2013**, 172504 (2013).
53. M.-H. Hong, S.-Y. Jung, T.-J. Ha, W.-S. Seo, Y. S. Lim, **S. Shin**, H. H. Cho & H.-H. Park, Thermoelectric properties of mesoporous TiO_2 thin films through annealing temperature and ratio of surfactant, *Surf. Coat. Technol.* **231**, 370–373 (2013).
54. J. Song, J. W. Lee, M. S. Yu, **S. Shin**, B. S. Kim & H. H. Cho, Thermal characteristics of inclined plate impinged by underexpanded sonic jet, *Int. J. Heat Mass Transf.* **62**, 223–229 (2013).

55. S.-Y. Jung, T.-J. Ha, C.-S. Park, W.-S. Seo, Y. S. Lim, **S. Shin**, H. H. Cho & H.-H. Park, Improvement in the conductivity ratio of ordered mesoporous Ag-TiO₂ thin films for thermoelectric materials, *Thin Solid Films* **529**, 94–97 (2013).
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60. **S. Shin**, B. S. Kim, K. M. Kim & H. H. Cho, Multi-variable thermal design of T-structured phase-change memory cell using advanced response surface method, *Microelectron. Eng.* **91**, 1–8 (2012).
61. T.-J. Ha, H.-H. Park, H. W. Jang, S.-J. Yoon, **S. Shin** & H. H. Cho, Study on the thermal stability of ordered mesoporous SiO₂ film for thermal insulating film, *Microporous Mesoporous Mater.* **158**, 123–128 (2012).
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63. K. M. Kim, **S. Shin**, D. H. Lee & H. H. Cho, Influence of material properties on temperature and thermal stress of thermal barrier coating near a normal cooling hole, *Int. J. Heat Mass Transf.* **54**, 5192–5199 (2011).
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66. T.-J. Ha, S.-Y. Jung, J.-H. Bae, H.-L. Lee, H. W. Jang, S.-J. Yoon, **S. Shin**, H. H. Cho & H.-H. Park, Analysis of heat transfer in ordered and disordered mesoporous TiO₂ films by finite element analysis, *Microporous Mesoporous Mater.* **144**, 191–194 (2011).
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68. **S. Shin**, B. H. Kong, B. S. Kim, K. M. Kim, H. K. Cho & H. H. Cho, Over 95% of large-scale length uniformity in template-assisted electrodeposited nanowires by subzero-temperature electrodeposition, *Nanoscale Res. Lett.* **6**, 467 (2011). (*Highly Accessed Article*)

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72. **S. Shin**, K. M. Kim, J. Song, H. K. Kim, D. J. Choi & H. H. Cho, Thermal stress analysis of Ge₁Sb₄Te₇-based phase-change memory devices, *IEEE Trans. Electron Dev.* **58**, 782–791 (2011).
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74. T.-J. Ha, H.-H. Park, E. S. Kang, **S. Shin** & H. H. Cho, Variations in mechanical and thermal properties of mesoporous alumina thin films due to porosity and ordered pore structure, *J. Colloid Interface Sci.* **345**, 120–124 (2010).
75. **S. Shin**, H. K. Kim, J. Song, D. J. Choi & H. H. Cho, Phase-dependent thermal conductivity of Ge₁Sb₄Te₇ and N:Ge₁Sb₄Te₇ for phase change memory applications, *J. Appl. Phys.* **107**, 033518 (2010).
76. H. K. Kim, S. Y. Lee, D. J. Choi, **S. Shin**, H. H. Cho & J. S. Roh, Effects of nitrogen doping and working pressure on the crystallization of Ge₁Sb₄Te₇ thin films for PRAM applications, *J. Kor. Phys. Soc.* **55**, 1896–1900 (2009).
77. D. H. Lee, K. M. Kim, **S. Shin** & H. H. Cho, Thermal analysis in a film cooling hole with thermal barrier coating, *J. Thermophys. Heat Transf.* **23**, 843–846 (2009).
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79. **S. Shin**, T.-J. Ha, H.-H. Park & H. H. Cho, Thermal conductivity of BCC-ordered mesoporous silica films, *J. Phys. D: Appl. Phys.* **42**, 125404 (2009).
80. S. G. Choi, T.-J. Ha, H.-H. Park, **S. Shin** & H. H. Cho, Effective heat conservation in a sandwich-structured microbolometer using mesoporous TiO₂ layers, *Sens. Actuators A* **155**, 131–135 (2009).
81. **S. Shin**, H. N. Cho, B. S. Kim & H. H. Cho, Influence of upper layer on measuring thermal conductivity of multilayer thin films using differential 3- ω method, *Thin Solid Films* **517**, 933–936 (2008).
82. S. G. Choi, T.-J. Ha, B.-G. Yu, **S. Shin**, H. H. Cho & H.-H. Park, Application of mesoporous TiO₂ as a thermal isolation layer for infrared sensors, *Thin Solid Films* **516**, 212–215 (2007).

BOOKS AND BOOK
CHAPTERS

1. **S. Shin** & A. S. Kim, (2018), Temperature Effect on Forward Osmosis, in H. Du, A. Thompson & X. Wang (Eds.), *Osmotically Driven Membrane Process – Approach, Development and Current Status*, InTech. (ISBN 978-953-51-5688-8)

INVENTION
DISCLOSURES AND
PATENTS

1. *Gradient induced particle motion in suspensions*, U.S. Patent No. 11,007,500 with H. A. Stone, P. B. Warren, O. Shardt & S. Shim (2021).
2. *Methods of particle manipulation and analysis*, U.S. Patent No. 10,697,931 with J. T. Ault , H. A. Stone, J. Feng & P. B. Warren (2020).
3. *Targeted delivery and release of drugs in tumors using sequential solution exchange*, Invention disclosure at the University of Hawaii at Manoa (2018).
4. *Rapid preconcentrator using flow-driven diffusiophoretic accumulation*, Invention disclosure at Princeton University with H. A. Stone, J. T. Ault & P. B. Warren (2017).
5. *Zeta potentiometer using diffusiophoresis and diffusioosmosis*, Invention disclosure at Princeton University with H. A. Stone, J. T. Ault, J. Feng & P. B. Warren (2017).
6. *Device and methods for continuous flow separation of particles by gas dissolution*, Invention disclosure at Princeton University with H. A. Stone, P. B. Warren & O. Shardt (2016).
7. *Particle motion in suspensions driven by contact with gas*, Invention disclosure at Princeton University with H. A. Stone, P. B. Warren, O. Shardt & S. Shim (2016).
8. *A method for producing large lipid vesicles*, Invention disclosure at Princeton University with H. A. Stone & J. T. Ault (2015).
9. *A method for controlling growth instability in template-assisted electrodeposition of nanowires*, Invention disclosure at Princeton University with H. A. Stone, T. T. Al-Housseiny, H. H. Cho & B. S. Kim (2014).
10. *Highly efficient desalination system and method using multi-stage ionic field-effect transistor*, Korean Patent 10-1592892 with H. H. Cho & B. S. Kim (2016).
11. *Highly efficient nanofluidic energy harvesting system and method using ionic field-effect transistor*, Korean Patent 10-1419742 with H. H. Cho & B. S. Kim (2014).
12. *Light-heat energy conversion module having nanostructured surface and method for fabricating the same*, Korean Patent 10-1374272 with H. H. Cho, B. S. Kim, J. Song & T. H. Kim (2014).
13. *Heat transfer element*, Korean Patent 10-1273365 with H. H. Cho, B. S. Kim, S. H. Lee & J. Song (2013).
14. *Method for Manufacturing Structure and Structure for Removing Bubble*, Korean Patent 10-1163639 with H. H. Cho, K. M. Kim, B. S. Kim, S. H. Lee & J. Song (2012).
15. *Bipolar plate with nano and micro structures*, Korean Patent 10-1075518 with H. H. Cho, J. H. Yoon, H. G. Kwon, B. S. Kim & S. H. Lee (2011).
16. *PCR device which has a real-time monitoring function*, Korean Patent 10-1040489 with H. H. Cho, K. M. Kim, D. H. Lee, B. S. Kim, S. H. Lee & M. O. Lee (2011).
17. *Apparatus of PCR using constant temperature metal block and method thereof*, Korean Patent 10-0790004 with H. H. Cho, M. S. Yu, D. H. Lee, J. J. Yi & B. S. Kim (2007).

- FUNDED GRANTS
1. National Science Foundation, CBET #2237177 (\$500,000), Role: PI, 2023-2028. *CAREER: Phoretic Transport of Membrane-Bound Biological Colloids in Complex Environments.*
 2. National Science Foundation, CBET #2223737 (\$335,860), Role: PI, 2022-2025. *Diffusiophoretic Bioaugmentation: Boosting the Bacterial Motility in Soil Matrix by Chemical Gradients for Enhanced Bioremediation.*
 3. National Science Foundation, CBET #1930691/2200882 (\$320,238), Role: PI, 2019-2023. *Colloid dynamics in porous media induced by fluid flow and solute transport.*
 4. National Science Foundation, CMMI #1919539 (\$466,902), Role: Co-PI (PI: Joseph J. Brown, Co-PIs: Tyler Ray, Sangwoo Shin, Woochul Lee, Aaron Ohta), 2019-2022. *MRI: Acquisition of High-Speed Lithography Tool for Research and Education at the University of Hawaii.*
 5. National Research Foundation of Korea, #2013R1A6A3A03020179 (\$30,000), Role: PI, 2013-2014. *Development of highly-efficient electrokinetic energy harvesting through surface engineering.*

AWARDS	NSF CAREER Award (National Science Foundation)	2023
	Finalist, Falling Walls Lab 2017 (Falling Walls Foundation)	2017
	National Postdoctoral Fellowship (National Research Foundation)	2013
	Distinguished Thesis Award (Yonsei University)	2012
	Best Thesis Award (Energy & Power Engineering Division, KSME)	2012
	Outstanding Poster Award (Micro & Nano Engineering Division, KSME)	2012
	Outstanding Paper Award (Dept. of Mech. Eng., Yonsei University)	2012
	Nano Today 2011 Student Travel Award (2nd Nano Today Conference)	2011
	Outstanding Paper Award (Dept. of Mech. Eng., Yonsei University)	2011
	National Science and Technology Fellowship (National Research Foundation)	2008
	Seoul Science Fellowship (Seoul Metropolitan Government)	2007

INVITED TALKS	University at Buffalo, Civil, Structural and Environmental Engineering	Apr. 2023
	Ohio State University, Mechanical and Aerospace Engineering	Feb. 2023
	Brown University, Fluids Seminar	Apr. 2022
	Jeonbuk National University, Mechanical System Engineering	Jan. 2022
	IEEE NANOMED 2020, Virtual Conference	Dec. 2020
	Mini-symposium on Fluid-Structure Interactions, OIST	Jan. 2020
	Yonsei University, Mechanical Engineering	Jan. 2020
	Chungnam National University, Chemical Engineering	Jan. 2020
	UNIST Mechanical Engineering	Dec. 2019
	TMS 2019, San Antonio, TX	Mar. 2019
	IEEE NANOMED 2018, Honolulu, HI	Dec. 2018
	Incheon National University, Materials Science and Engineering	Nov. 2018
	Korea Institute of Energy Research	Nov. 2018
	Chung-Ang University, Mechanical Engineering	Nov. 2018
	Okinawa Institute of Science and Technology (OIST)	Nov. 2018
	Falling Walls Lab 2017, Berlin, Germany	Nov. 2017
	Korea Institute of Science and Technology (KIST)	Jan. 2017
	Yonsei University, Mechanical Engineering	Jan. 2017
	Sungkyunkwan University, Mechanical Engineering	Jan. 2017
	UNIST Physics & IBS CSLM	Feb. 2016
	Yonsei University, Mechanical Engineering	Jan. 2016

	Stevens Institute of Technology, Mechanical Engineering	Mar. 2015
	New Jersey Institute of Technology, Mathematical Sciences	Apr. 2014
TEACHING EXPERIENCE	Course Instructor (University at Buffalo) Thermodynamics (MAE204; Undergraduate) Biotransport and Biofluid Mechanics (MAE618; Graduate)	2021–current
	Course Instructor (University of Hawaii) Thermodynamics (ME311; Undergraduate) Mechanics of Fluids and Lab (ME322; Undergraduate) Introduction to Transport Phenomena (ME491; Undergraduate) Introduction to Microfluidics (ME491; Undergraduate) Microfluidics and Nanofluidics (ME624; Graduate) Biotransport and Biofluid Mechanics (ME696; Graduate)	2017–2021
STUDENTS ADVISED	Current Members Viet Sang Doan Ali Nikkhah Dang Duong	PhD student, 2021–current PhD student, 2022–current MS student, 2023–current
	Thesis Committee Chair Viet Sang Doan Sung wan Park Kyle Barefoot	MS, 2021 MS, 2020 MS, 2018
	Thesis Committee Member Ruben Poehnl Rintaro Hayashi Don Krasky Shane Laibach Myles Geise Adam Macalalag Matthew Nakamura	PhD, 2023 PhD, 2021 PhD, 2019 MS, 2023 MS, 2023 MS, 2021 MS, 2021
	Postdocs and Visitors Liangyu Wu Cheng Yu Tanja Riess	Visiting Postdoc, 2019-2020 Visiting Postdoc, 2019-2020 Visiting MS student, 2019
	Undergraduates Jeffrey Zheng Trevor Shimokusu Kaytlynn Chun Fat-Ardren Penny Loo	2017-2018 2017-2019 2018-2019 2020-2021
OTHER PROFESSIONAL ACTIVITIES	Co-founder Phoresis Inc., Princeton, NJ	2018–current
	Conference Organizing Committee Technical Program Committee, <i>12th IEEE International Conference on Nano/Molecular Medicine and Engineering (IEEE-NANOMED 2018)</i> Technical Program Committee, <i>15th IEEE International Conference on Nano/Molecular Medicine and Engineering (IEEE-NANOMED 2021)</i>	Dec. 2018 Nov. 2021

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Memberships

American Physical Society, Materials Research Society, American Chemical Society