

Youhua Jiang

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EDUCATION & POSTDOCTORAL TRAINING

Northwestern University Postdoctoral Fellow at Mechanical Engineering for thermofluidics	Evanston, IL, USA June/2018 – Aug/2020
Stevens Institute of Technology Ph.D. in Mechanical Engineering	Hoboken, NJ, USA 2014 - 2018
Stevens Institute of Technology M.S. in Mechanical Engineering	Hoboken, NJ, USA 2012 - 2014
University of Shanghai for Science and Technology B.S. in Energy and Power Engineering	Shanghai, China 2008 - 2012

RESEARCH EXPERIENCE

- **Advanced Manufacturing:** Surface Engineering for Nano-/Microstructures
 - **Colloidal Science:** Site-Specific Self-Assembly of Nano-/Micromaterials
 - **Interfacial Phenomena:** Droplet/Bubble Retention on Textured Surfaces (**ONR**)
 - **Interfacial Phenomena:** Texture-Controlled Spontaneous Directional Liquid Transport
 - **Fluid Dynamics:** Sliding, Impact, & Coalescence of Droplet/Bubble
 - **Fluid Dynamics:** Airborne Aerosol Collection & Underwater Oil Capture
 - **Thermofluidics:** Condensation, Evaporation, Boiling, Frosting, and Icing (**NSF**)
 - **Smart Materials:** Stimuli-Responsive Surfaces for Droplet Manipulation (**ACS PRF**)
 - **Environmental Engineering:** Brine Management
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TEACHING EXPERIENCE

Northwestern University

- **ME 495:** Experimental interfacial phenomena (Guest Lecturer)

Stevens Institute of Technology

- **ME 234:** Mechanical Engineering Thermodynamics (Teaching Assistant)
- **ME 342:** Fluid Mechanics (Teaching Assistant)
- **ME 342:** Fluid Mechanics - Experimental Section (Guest Lecturer)
- **ME 354:** Heat Transfer (Teaching Assistant)
- **Cleanroom Operations:** Lithography Systems & Reactive Ion Etching Systems (Trainer)

Key Skills

- Techniques and equipment related to surface fabrication: Lithography systems, RIE, DRIE, PVD, etc.
- Surface structure characterization: SEM, ESEM, AFM, XPS, Interference Microscopy, etc.
- Surface functionality characterization: properties related with thermofluidics (e.g., wettability)

HONORS & AWARDS

- **Graduate Conference Fund**, Stevens Institute of Technology (2014, 2017).
- **ABS Scholarship**, American Bureau of Shipping (2014-2016).
- **Ph.D. Conference Fund**, Stevens Institute of Technology (2017).

PROFESSIONAL SERVICE

- **Invited Reviewer of Peer-Reviewed Journals** (19 journals): ACS Applied Material & Interface, ACS Omega, Applied Surface Science, Applied Thermal Engineering, Colloids and Surface A, Colloid and Interface Science Communications, Coatings, IEEE Nanotechnology, IEEE Sensors, Journal of Colloid and Interface Science, Langmuir, Microfluidics & Nanofluidics, Micromachines, Nanoscale, Nano-Structures & Nano-Objectives, Science Bulletin, Soft Matter, Surface Innovations, and Scientific Reports.

PROFESSIONAL MEMBERSHIP

- American Physical Society (APS)
- American Chemical Society (ACS)

RESEARCH OUTPUTS

(Google Scholar Citation > 230, updated by Oct. 1st, 2020)

	All outputs	First author (presenter)
Journal articles	21	11
Articles submitted or in preparation	6	6
International conference presentation	19	10

Patents

(1 issued)

1. **Jiang, Y.**; Machado, C.; O'Donnell, A.E.; Park, K.-C., [Collection/Filtration of Emulsion and Particles by a Cylinder](#). **US Patent App. 62/934,055**
2. **Jiang, Y.** and Park, K.-C., [Smog Filtration Using Flexible Wires](#). **US Patent App. 62/833,885**
3. **Jiang, Y.**; Patankar, N.A.; Park, K.-C., [Brine Management Systems for Achieving Zero Liquid Discharge](#). **US Patent App. 62/746,652**
4. **Jiang, Y.**; Yao, Y.; Park, K.-C.; Machado, C., [Liquid Collection on Wavy Surfaces](#). **WO2020033667A1**. (issued)
5. Gelber, A.B.; Yao, Y.; Petrovich, M.L.; Well, G.F.; Park, K.-C.; **Jiang, Y.**, [Magnetically Controlled Particle Abrasion Method for Biofouling Removal](#). **US20190151905A1**. (Issued)

Book Chapter

1. **Jiang, Y.**; Xu, W.; Choi, C.-H., [Effects of Particulates on Contact Angles and Adhesion of a Droplet](#). *Progress in Adhesion and Adhesives* **2017**, 187-215.

Articles under Review

1. **Jiang, Y.**; O'Donnell, A.E.; Machado, C.; Patankar, N.A.; Park, K.-C.; [Oscillatory Coalescence-Induced Self-Acceleration of Droplets on a Superhydrophilic Wire](#). Submitted to *Phys. Rev. Lett.* (in revision).

Journal Articles

1. **Jiang, Y.**; Sun, Y.; Drelich J.W.; Choi, C.-H., [Topography-Dependent Effective Contact Line in Droplet Depinning](#), *Phys. Rev. Lett.* (in press).
2. **Jiang, Y.**; Choi, C.-H., [Droplet Retention on Superhydrophobic Surfaces: A Critical Review](#), *Adv. Mater. Interfaces* **2020**, 20201205.
3. Song, D.; **Jiang, Y.**; Chou, T.; Asawa, K.; Choi, C.-H., [Spontaneous Deicing on Cold Surfaces](#), *Langmuir* **2020**, 36(38), 11245-11254.
4. Wang, D.; **Jiang, Y.***; Zhu, Z.; Yin, W.; Asawa, K.; Choi, C.-H.*; Drelich, J.W.*, [Contact Line and Adhesion Force of Droplets on Concentric Ring-Textured Hydrophobic Surfaces](#). *Langmuir* **2020**, 36(10), 2622-2628. (*Corresponding Author)
5. **Jiang, Y.**; Machado, C.; Savarirayan, S.; Patankar, N.A.; Park, K.-C., [Onset Time of Fog Collection](#). *Soft Matter* **2019**, 15, 6779-6783.
 - Featured as the back cover
6. Lee, J.; **Jiang, Y.**; Hizal, F.; Ban, G.H.; Jun, S.; Choi, C.-H., [Durable Omniphobicity of Oil-Impregnated Anodic Aluminum Oxide Nanostructured Surfaces](#). *J. Colloid Interf. Sci.* **2019**, 553, 734-745.
7. **Jiang, Y.**; Xu, W.; Sarshar, M.A.; Choi, C.-H., [Generalized Model for Advancing and Receding Contact Angles of Fakir Droplets on Pillared and Pored Surfaces](#). *J. Colloid Interf. Sci.* **2019**, 552, 359-371.
 - Supported by Ph.D. Conference Fund for the presentation at UCLA, CA.
8. **Jiang, Y.**; Savarirayan, S.; Yao, Y.; Park, K.-C., [Fog Collection on a Superhydrophilic Wire](#). *Appl. Phys. Lett.* **2019**, 114, 083701.
 - Highlighted in *Nature Materials* - “**Drinking up mist**”
9. Sarshar, M.A.#; **Jiang, Y.#**; Xu, W.; Choi, C.-H., [Depinning Force of a Receding Droplet on Pillared Superhydrophobic Surfaces: Analytical Models](#), *J. Colloid Interf. Sci.* **2019**, 543, 122-129. (#Equal Contribution)
10. Du, K.; **Jiang, Y.**; Liu, Y.; Wathuthanthri, I.; Choi, C.-H., [Manipulation of the Superhydrophobicity of Plasma-Etched Polymer Nanostructures](#). *Micromachines* **2018**, 9(6), 304.
11. **Jiang, Y.**; Sun, Y.; Drelich, J.W.; Choi, C.-H., [Spontaneous Spreading of a Droplet: The Role of Solid Continuity and Advancing Contact Angle](#). *Langmuir* **2018**, 34(17), 4945-4951.
 - Supported by Graduate Conference Fund for the presentation at APS DFD.

12. Sun, Y.; **Jiang, Y.**; Choi, C.-H.; Xie, G.; Liu, Q.; Drelich, J.W., [The Most Stable State of a Droplet on Anisotropic Patterns: Support for a Missing Link](#). *Surf. Innov.* **2018**, 6(3), 133-140.
13. Du, K.; **Jiang, Y.**; Huang, P.S.; Ding, J.; Gao, T.; Choi, C.-H., [Self-Formation of Polymer Nanostructures in Plasma Etching: Mechanisms and Applications](#). *J. Micromech. Microeng.* 2018, 28, 014006.
14. Sun, Y.; **Jiang, Y.**; Choi, C.-H.; Xie, G.; Liu, Q.; Drelich, J.W., [Direct Measurements of Adhesion Forces of Water Droplets on Smooth and Patterned Polymers](#). *Surf. Innov.* **2018**, 6(1-2), 93-105.
15. Zheng, D.; **Jiang, Y.**; Yu, W.; Jiang, X.; Zhao, X.; Choi, C.-H.; Sun, G., [Salvinia-Effect-Inspired “Sticky” Superhydrophobic Surfaces by Meniscus-Confined Electrodeposition](#). *Langmuir* **2017**, 33(47), 13640-13648.
16. **Jiang, Y.**; Xu, J.; Lee, J.; Du, K.; Yang, E.H.; Moon, M.W., Choi, C.-H., [Nanotexturing of Conjugated Polymers via One-Step Maskless Oxygen Plasma Etching for Enhanced Tunable Wettability](#). *Langmuir* **2017**, 33(27), 6885-6894.
 - Supported by Graduate Conference Fund for the presentation at 91st ACS CSSS.
17. Xu, W.; Palumbo, A.; Xu, J.; **Jiang, Y.**; Choi, C.-H.; Yang, E.H., [On-Demand Capture and Release of Organic Droplets Using Surfactant-Doped Polypyrrole Surfaces](#). *ACS. Appl. Mater. Interfaces*, **2017**, 9(27), 23119-23127.
18. Lee, J.; Shin, S.; **Jiang, Y.**; Jeong, C.; Stone, H.A.; Choi, C.-H., [Oil-Impregnated Nanoporous Oxide Layer for Corrosion Protection with Self-Healing](#). *Adv. Funct. Mater.* **2017**, 27, 1606040.
19. **Jiang, Y.**; Xu, W.; Choi, C.-H., [Effects of Particulates on Contact Angles and Adhesion of a Droplet: A Critical Review](#). *Rev. Adhesion Adhesives* **2016**, 4(2), 192-222.

Conference Presentations

(Underline represents the presenter)

1. **Jiang, Y.**; Machado, C.; Savarirayan, S.; Patankar, N.A.; Park, K.-C., [Onset Time of Fog Collection Using a Single Wire](#). 72nd APS Division of Fluid Dynamics, November 23-26, **2019**, Seattle, Washington, USA.
2. Machado, C.; **Jiang, Y.**; Park, K.-C., [Jet Atomization of Brine to Achieve Zero Liquid Discharge](#). 72nd APS Division of Fluid Dynamics, November 23-26, **2019**, Seattle, Washington, USA.
3. O'Donnell, A.; **Jiang, Y.**; Park, K.-C., [Droplet Propulsion on a Superhydrophilic Wire Induced by Coalescence](#). 72nd APS Division of Fluid Dynamics, November 23-26, **2019**, Seattle, Washington, USA.
4. **Jiang, Y.**; Machado, C.; Savarirayan, S.; Patankar, N.A.; Park, K.-C., [Onset Time of Fog Collection](#). 1st International Conference on Nature Inspired Surface Engineering, June 11-14, **2019**, Hoboken, New Jersey, USA.
5. **Jiang, Y.**; Machado, C.; Savarirayan, S.; Park, K.-C., [Fog Harvesting on Wire Arrays](#). APS March Meeting, March 4-8, **2019**, Boston, Massachusetts, USA.

6. **Jiang, Y.**; Savarirayan, S.; Yao, Y.; Park, K.-C., [Fog Harvesting on a Vertical Wire](#). *71st APS Division of Fluid Dynamics*, November 18-20, **2018**, Atlanta, Georgia, USA.
7. Cai, K.; **Jiang, Y.**; Yao, Y.; Kurup, M.; [Park, K.-C.](#), [Atomization of Brine for Zero Liquid Discharge](#), *71st APS Division of Fluid Dynamics*, November 18-20, **2018**, Atlanta, Georgia, USA.
8. **Jiang, Y.**; Sun, Y.; Drelich, J.W.; Choi, C.-H., [Droplet Adhesion on Superhydrophobic Surfaces: Topography-Dependent Effective Contact Line](#). *11th international symposium on contact angle, wettability and adhesion*, July 13-15, **2018**, Hoboken, New Jersey, USA.
9. **Jiang, Y.**; Sun, Y.; Drelich, J.W.; [Choi, C.-H.](#), [Spontaneous Spreading of a Droplet on a Solid Surface: The Fundamental Role of Advancing Contact Angle](#). *11th international symposium on contact angle, wettability and adhesion*, July 13-15, **2018**, Hoboken, New Jersey, USA.
10. [Ozbay, R.](#); **Jiang, Y.**; Kibar, A.; Choi, C.-H., [Dynamics of Contact Line Pinning/Depinning of Sliding Bubble on Super-Aerophobic Surfaces](#). *70th APS Division of Fluid Dynamics*, November 19-21, **2017**, Denver, Colorado, USA.
11. **Jiang, Y.**; Cao, L.; Guo, Z.; Choi, C.-H., [Droplet Sliding on Inclined Superhydrophobic Surfaces: The Effect of Anisotropic Contact Line](#). *70th APS Division of Fluid Dynamics*, November 19-21, **2017**, Denver, Colorado, USA.
12. **Jiang, Y.**; Guo, Z.; Choi, C.-H., [The Origin of Droplets' Retention on Superhydrophobic Surfaces](#). *3rd international conference on droplets*, July 24-26, **2017**, Los Angeles, California, USA.
13. **Jiang, Y.**; Xu, J.; Yang, E.H.; Choi, C.-H., [Effects of Nanostructures on Tunable Droplet Mobility on Conjugated Polymer Surfaces](#). *91th ACS 2017 colloids & surface science symposium*, June 9-12, **2017**, New York City, New York, USA.
14. Xu, W.; Palumbo, A.; [Xu, J.](#); **Jiang, Y.**; Choi, C.-H.; Yang, E.H., [On-Demand Capture and Release of Organic Droplets on Surfactant-Doped Polypyrrole Surfaces](#). *91th ACS 2017 colloids & surface science symposium*, June 9-12, **2017**, New York City, New York, USA.
15. [Lee, J.](#); **Jiang, Y.**; Choi, C.-H., [Oil-Impregnated Anodic Aluminum Oxide Layers for Omniphobic Surfaces](#). *10th international symposium on contact angle, wettability and adhesion*, July 13-15, **2016**, Hoboken, New Jersey, USA.
16. **Jiang, Y.**; Xu, W.; Sarshar, M.A.; Choi, C.-H., [A Generalized Model of Advancing and Receding Contact Angles for Patterned Surfaces](#). *10th international symposium on contact angle, wettability and adhesion*, July 13-15, **2016**, Hoboken, New Jersey, USA.
17. **Jiang, Y.**; Xu, W.; Connington, K.; [Choi, C.-H.](#), [Effects of Nanoparticles on the Depinning Force of a Receding Droplet on Micropatterned Superhydrophobic Surfaces](#). *9th ICMF international conference on multiphase flow*, May 22-27, **2016**, Firenze, Italy.
18. **Jiang, Y.**; Sarshar, M.A.; Xu, W.; [Choi, C.-H.](#), [Effect of Three Phase Contact Line on Contact Angle Hysteresis and Depinning Force on Micro-porous Hydrophobic Surfaces](#). *88th ACS 2014 colloids & surface science symposium*, June 22-25, **2014**, Philadelphia, Pennsylvania, USA.

19. **Jiang, Y.**; Sarshar, M.A.; Xu, W.; Choi, C.-H., [Contact Angle Hysteresis and Depinning Force on Hydrophobic Porous Surfaces](#). *9th international symposium on contact angle, wettability and adhesion*, June 16-18, **2014**, Bethlehem, Pennsylvania, USA.

Invited Seminars

1. [From Airborne Droplet Capture to Liquid Transport: Surface Engineering for Optimized Fog Collection](#), Invited talk at the Department of Mechanical Engineering and Institute for Microfabrication, **Louisiana Tech University**, Ruston, LA, USA, Feb. 17, 2020.
2. [From Airborne Droplet Capture to Liquid Transport: Surface Engineering for Optimized Fog Collection](#), Invited talk at the Department of Mechanical and Industrial Engineering, **New Jersey Institute of Technology**, Newark, NJ, USA, Feb. 13, 2020.