

Sheng, Yu-Jane (謹玉真)

Professor

B.S. in Chemical Engineering

National Taiwan University, 1986

M.S. in Chemical Engineering

National Taiwan University, 1988

Ph.D. in Chemical Engineering

Cornell University, 1995

Postdoctoral Research Associate

Department of Physics

National Central University

Research and Professional Interests

Molecular simulations of the thermophysical properties of polymers and composites

Development of statistical mechanics-based equation of state for polyatomic molecules

Studies of the dynamical properties of polymers in dilute solutions

Topological effects on the relaxation dynamics of knotted polymers

Journal Papers

1. C. C. Chang, C. J. Wu, **Y. J. Sheng** and H. K. Tsao, "Anti-smudge behavior of facilely fabricated liquid-infused surfaces with extremely low contact angle hysteresis property", *Rsc Advances*, 6(23), 19214-19222, 2016, (SCI,EI)
2. C. J. Wu, C. J. Huang, S. Y. Jiang, **Y. J. Sheng** and H. K. Tsao, "Superhydrophilicity and spontaneous spreading on zwitterionic surfaces: carboxybetaine and sulfobetaine", *Rsc Advances*, 6(30), 24827-24834, 2016, (SCI,EI)
3. C. J. Wu, **Y. J. Sheng** and H. K. Tsao, "Copper conductive lines on flexible substrates fabricated at room temperature", *Journal of Materials Chemistry C*, 4(15), 3274-3280, 2016, (SCI,EI)
4. H. L. Wu, H. K. Tsao and **Y. J. Sheng**, "Dynamic and mechanical properties of supported lipid bilayers", *Journal of Chemical Physics*, 144(15), 2016(Apr), (SCI,EI)
5. Y. F. Chen, H. H. Wei, **Y. J. Sheng** and H. K. Tsao, "Superdiffusion in dispersions of active colloids driven by an external field and their sedimentation equilibrium", *Physical Review E*, 93(4), 42611, 2016(Apr), (SCI,EI)
6. C. Y. Teng, **Y. J. Sheng** and H. K. Tsao, "Boundary-induced segregation in nanoscale thin films of athermal polymer blends", *Soft Matter*, 12(20), 4603-4610, 2016, (SCI,EI)
7. C. J. Wu, Y. F. Li, W. Y. Woon, **Y. J. Sheng** and H. K. Tsao, "Contact Angle Hysteresis on Graphene Surfaces and Hysteresis-free Behavior on Oil-infused Graphite Surfaces", *Applied Surface Science*, 385, 153-161, 2016(Nov), (SCI,EI)
8. Y. L. Yang, H. K. Tsao and **Y. J. Sheng**, "Solid-supported polymer bilayers formed by coil-coil block copolymers", *Soft Matter*, 12(30), 6442-6450, 2016, (SCI,EI)
9. Y. E. Liang, Y. H. Weng, H. K. Tsao and **Y. J. Sheng**, "Meniscus Shape and Wetting Competition of a Drop between a Cone and a Plane", *Langmuir*, 32(33), 8543-8549, 2016(Aug), (SCI,EI)
10. Y. F. Chen, H. J. Tsai, **Y. J. Sheng** and H. K. Tsao, "Shape Recognition of

- Nanoparticle-Imprinting Materials Enhanced by Depletants", *Journal of Physical Chemistry C*, 120(35), 19871-19877, 2016(Sep), (SCI,EI)
11. C. C. Chang, **Y. J. Sheng** and H. K. Tsao, "Wetting hysteresis of nanodrops on nanorough surfaces", *Physical Review E*, 94(4), 2016(Oct), (SCI,EI)
 12. C. C. Chang, C. J. Wu, **Y. J. Sheng** and H. K. Tsao, "Resisting and pinning of a nanodrop by trenches on a hysteresis-free surface", *Journal of Chemical Physics*, 145(16), 2016(Oct), (SCI,EI)
 13. Y. F. Chen, H. Y. Chen, **Y. J. Sheng** and H. K. Tsao, "Directed drift and fluid pumping of nanoswimmers by periodic rectification-diffusion", *Journal of Chemical Physics*, 146(1), 2017(Jan), (SCI,EI)
 14. C. Y. Teng, **Y. J. Sheng** and H. K. Tsao, "Particle size-induced transition between surface segregation and bulk aggregation in a thin film of athermal polymer-nanoparticle blends", *Journal of Chemical Physics*, 146(1), 2017(Jan), (SCI,EI)
 15. C. J. Wu, C. C. Chang, **Y. J. Sheng** and H. K. Tsao, "Extraordinarily Rapid Rise of Tiny Bubbles Sliding beneath Superhydrophobic Surfaces", *Langmuir*, 33(5), 1326-1331, 2017(Feb), (SCI,EI)
 16. C. Y. Teng, **Y. J. Sheng** and H. K. Tsao, "Surface Segregation and Bulk Aggregation in an Athermal Thin Film of Polymer-Nanoparticle Blends: Strategies of Controlling Phase Behavior", *Langmuir*, 33(10), 2639-2645, 2017(Mar), (SCI,EI)
 17. Y. E. Liang, Y. H. Weng, I. F. Hsieh, H. K. Tsao and **Y. J. Sheng**, "Attractive Encounter of a Nanodrop toward a Nanoprotrusion", *Journal of Physical Chemistry C*, 121(14), 7923-7930, 2017(Apr), (SCI,EI)
 18. Y. H. Weng, I. F. Hsieh, H. K. Tsao and **Y. J. Sheng**, "Water-repellent hydrophilic nanogrooves", *Physical Chemistry Chemical Physics*, 19(20), 13022-13029, 2017(May), (SCI,EI)
 19. V. Singh, C. J. Wu, **Y. J. Sheng** and H. K. Tsao, "Self-Propulsion and Shape Restoration of Aqueous Drops on Sulfobetaine Silane Surfaces", *Langmuir*, 33(24), 6182-6191, 2017(Jun), (SCI,EI)
 20. C. J. Wu, V. Singh, **Y. J. Sheng** and H. K. Tsao, "Forced Spreading of Aqueous Solutions on Zwitterionic Sulfobetaine Surfaces for Rapid Evaporation and Solute Separation", *Langmuir*, 33(30), 7569-7574, 2017(Aug), (SCI,EI)
 21. C. J. Wu, K. C. Chu, **Y. J. Sheng** and H. K. Tsao, "Sliding Dynamic Behavior of a Nanobubble on a Surface", *Journal of Physical Chemistry C*, 121(33), 17932-17940, 2017(Aug), (SCI,EI)
 22. Y. H. Weng, C. J. Wu, H. K. Tsao and **Y. J. Sheng**, "Spreading dynamics of a precursor film of nanodrops on total wetting surfaces", *Physical Chemistry Chemical Physics*, 19(40), 27786-27794, 2017(Oct), (SCI,EI)
 23. Y. F. Chen, H. Y. Chen, **Y. J. Sheng** and H. K. Tsao, "Direction-dependent force-induced dissociation dynamics of an entropic-driven lock-and-key assembly", *Physical Review E*, 96(3), 2017(Sep), (SCI,EI)

24. H. L. Wu, H. K. Tsao and **Y. J. Sheng**, "Helical wrapping of diblock copolymers on nanocylinder", *Journal of the Taiwan Institute of Chemical Engineers*, 81, 104-109, 2017(Dec), (SCI,EI)
25. Y. L. Yang, M. Y. Chen, H. K. Tsao and **Y. J. Sheng**, "Dynamics of bridge-loop transformation in a membrane with mixed monolayer/bilayer structures", *Physical Chemistry Chemical Physics*, 20(9), 6582-6590, 2018(Mar), (SCI,EI)
26. V. Singh, C. J. Huang, **Y. J. Sheng** and H. K. Tsao, "Smart zwitterionic sulfobetaine silane surfaces with switchable wettability for aqueous/nonaqueous drops", *Journal of Materials Chemistry A*, 6(5), 2279-2288, 2018(Feb), (SCI,EI)
27. Y. H. Weng, Y. E. Liang, **Y. J. Sheng** and H. K. Tsao, "Controlling Nanodrop Passage through Capillary Nanovalves by Adjusting Lyophilic Crevice Structure", *Journal of Physical Chemistry C*, 122(4), 2231-2237, 2018(Feb), (SCI,EI)
28. Z. J. Wang, Y. F. Chen, H. Y. Chen, **Y. J. Sheng** and H. K. Tsao, "Mechanical pressure; surface excess; and polar order of a dilute rod-like nanoswimmer suspension: role of swimmer-wall interactions", *Soft Matter*, 14(15), 2906-2914, 2018(Apr), (SCI,EI)
29. V. Singh, **Y. J. Sheng** and H. K. Tsao, "Facile fabrication of superhydrophobic copper mesh for oil/water separation and theoretical principle for separation design", *Journal of the Taiwan Institute of Chemical Engineers*, 87, 150-157, 2018(Jun), (SCI,EI)
30. Y. F. Chen, Z. J. Wang, K. C. Chu, H. Y. Chen, **Y. J. Sheng** and H. K. Tsao, "Hydrodynamic interaction induced breakdown of the state properties of active fluids", *Soft Matter*, 14(25), 5319-5326, 2018(Jul), (SCI,EI)
31. Y. H. Weng, H. K. Tsao and **Y. J. Sheng**, "Self-healing and dewetting dynamics of a polymer nanofilm on a smooth substrate: strategies for dewetting suppression", *Physical Chemistry Chemical Physics*, 20(31), 20459-20467, 2018(Aug), (SCI,EI)
32. V. Singh, T. P. Nguyen, **Y. J. Sheng** and H. K. Tsao, "Stress-Driven Separation of Surfactant-Stabilized Emulsions and Gel Emulsions by Superhydrophobic/Superoleophilic Meshes", *Journal of Physical Chemistry C*, 122(43), 24750-24759, 2018(Nov), (SCI,EI)
33. Y. L. Yang, **Y. J. Sheng** and H. K. Tsao, "Branching pattern effect and co-assembly with lipids of amphiphilic Janus dendrimersomes", *Physical Chemistry Chemical Physics*, 20(43), 27305-27313, 2018(Nov), (SCI,EI)
34. S. W. Hu, C. Y. Huang, H. K. Tsao and **Y. J. Sheng**, "Hybrid membranes of lipids and diblock copolymers: From homogeneity to rafts to phase separation", *Physical Review E*, 99(1), 12403, 2019(Jan), (SCI,EI)
35. K. C. Chu, H. K. Tsao and **Y. J. Sheng**, "Penetration dynamics through nanometer-scale hydrophilic capillaries: Beyond Washburn's equation and extended menisci", *Journal of Colloid and Interface Science*, 538, 340-348, 2019(Mar), (SCI,EI)
36. Y. L. Yang, **Y. J. Sheng** and H. K. Tsao, "Hybridization of lipids to monolayer and bilayer membranes of triblock copolymers", *Journal of Colloid and Interface Science*, 544, 53-60, 2019(May), (SCI,EI)
37. Y. L. Yang, **Y. J. Sheng** and H. K. Tsao, "Bilayered membranes of Janus dendrimers

- with hybrid hydrogenated and fluorinated dendrons: microstructures and coassembly with lipids", *Physical Chemistry Chemical Physics*, 21(28), 15400-15407, 2019(Jul), (SCI,EI)
38. Y. H. Weng, H. K. Tsao and **Y. J. Sheng**, "Patterning Dewetting and Self-Healing of Polymer Nanofilms on a Brush Layer", *Journal of Physical Chemistry C*, 123(6), 3560-3567, 2019(Feb), (SCI,EI)
 39. V. Singh, **Y. J. Sheng** and H. K. Tsao, "Self-healing atypical liquid-infused surfaces: Superhydrophobicity and superoleophobicity in submerged conditions", *Journal of the Taiwan Institute of Chemical Engineers*, 97, 96-104, 2019(Apr), (SCI,EI)
 40. Y. S. Peng, Z. J. Wang, K. C. Chu, **Y. J. Sheng** and H. K. Tsao, "Favorable partition of nanoswimmers toward a confined slit", *Physical Review E*, 100(4), 2019(Oct), (SCI,EI)
 41. Y. E. Liang, I. K. Maharsih, **Y. J. Sheng** and H. K. Tsao, "Capillary interactions between droplets and ideal roughness: Attractive protrusion and repulsive trench", *Experimental Thermal and Fluid Science*, 105, 216-222, 2019(Jul), (SCI,EI)
 42. S. W. Hu, C. Y. Wang, **Y. J. Sheng** and H. K. Tsao, "Peculiar Wetting of N,N-Dimethylformamide: Expansion;Contraction;and Self-Running", *Journal of Physical Chemistry C*, 123(40), 24477-24486, 2019(Oct), (SCI,EI)
 43. K. C. Chu, S. W. Hu, H. K. Tsao and **Y. J. Sheng**, "Strong competition between adsorption and aggregation of surfactant in nanoscale systems", *Journal of Colloid and Interface Science*, 553, 674-681, 2019(Oct), (SCI,EI)
 44. K. W. Teng, S. H. Tu, S. W. Hu, Y. X. Huang, **Y. J. Sheng** and H. K. Tsao, "Abnormal redeposition of silicate from Si₃N₄ etching onto SiO₂ surfaces in flash memory manufacturing", *Journal of Materials Science*, 55(3), 1126-1135, 2020(Jan), (SCI,EI)
 45. K. C. Chu, **Y. J. Sheng** and H. K. Tsao, "Pressure-gated Capillary Nanovalves Based on Liquid Nanofilms", *Journal of Colloid and Interface Science*, 560, 485-491, 2020(Feb), (SCI,EI)
 46. S. W. Hu, V. Singh, **Y. J. Sheng** and H. K. Tsao, "Facilely-Fabricated Smart Hydroxyl-Surfaces with Rapidly Switchable Wettability for Water and Oil : Reversibility between Superoleophilicity and Near Superoleophobicity", *Journal of the Taiwan Institute of Chemical Engineers*, 107, 182-188, 2020, (SCI,EI).
 47. Y. L. Yang, H. K. Tsao and **Y. J. Sheng**, "Morphology and Wetting Stability of Nanofilms of ABC Miktoarm Star Terpolymers", *Macromolecules*, 53, 594-601, 2020, (SCI,EI).
 48. Thao Phuong Nguyen, Ssu-Wei Hu, **Y. J. Sheng**, and Heng-Kwong Tsao, "Scanty-water Oil-in-water Emulsion Glasses Synthesized through a Low-energy Process: Nucleation and Growth Mechanism", *J. Taiwan Inst. Chem. E.*, 109, 129-136, 2020, (SCI, EI)
 49. Hsiang-Chi Tsai, Yan-Ling Yang, **Y. J. Sheng** and Heng-Kwong Tsao "Formation of Asymmetric and Symmetric Hybrid Membranes of Lipids and Triblock Copolymers", *Polymers*, 12, 639, 2020, (SCI, EI)
 50. Ssu-Wei Hu, Pin-Jung Sung, Thao Phuong Nguyen, **Y. J. Sheng**, and Heng-Kwong Tsao, "UV-resistant Self-healing Emulsion Glass as a New Liquid-like Solid Material for 3D Printing", *ACS Applied Materials & Interfaces*, 12(21), 24450-24457, 2020

(May), (SCI, EI)

51. Ying-Shuo Peng, **Y. J. Sheng**, and Heng-Kwong Tsao, "Partition of nanoswimmers between two immiscible phases: soft and penetrable boundary", *Soft Matter*, 16, 5054-5061, 2020 (May), (SCI, EI)
52. Yu-Ting Cheng, Kang-Ching Chu, Heng-Kwong Tsao and **Y. J. Sheng** "Size-dependent behavior and failure of Young's equation for wetting of two-component nanodroplets", *J. Colloid Interface Sci.* 578, 69-76, 2020, (SCI, EI)
53. Wan-Ju Liao, Kang-Ching, Chu, Yu-Hao, Tsao, Heng-Kwong Tsao and **Y. J. Sheng** "Size-dependence and interfacial segregation in nanofilm and nanodroplet of homologous polymer blends," *Phys. Chem. Chem. Phys.*, 22, 21801-21808, 2020, (SCI, EI)
54. Thao Phuong Nguyen, Ssu-Wei Hu, Yu-Jung Lin, **Y. J. Sheng**, and Heng-Kwong Tsao "Coexistence of liquid-like emulsion and solid-like emulsion glass beyond the close-packing limit," *J. Taiwan Inst. Chem. E.*, 115, 28-34, 2020, (SCI, EI)
55. Ting-Ya Wang, Heng-Kwong Tsao and **Y. J. Sheng** "Perforated Vesicles of ABA Triblock Copolymers with ON/OFF-Switchable Nanopores," *Macromolecules*, 53, 10582–10590, 2020, (SCI, EI)
56. Yan-Ling Yang, Heng-Kwong Tsao and **Y. J. Sheng** "Molecular structure incorporated deep learning approach for the accurate interfacial tension predictions," *J. Mol. Liq.* 323, 114571, 2021, (SCI, EI)
57. Ssu-Wei Hu, Kuan-Yu Chen, **Y. J. Sheng**, and Heng-Kwong Tsao, "Directed self-propulsion of droplets on surfaces absent of gradients for cargo transport," *J. Colloid Interface Sci.* 586, 469-478, 2021, (SCI, EI)
58. Hsin-Yu Chang, Hsiang-Chi Tsai, **Y. J. Sheng** and Heng-Kwong Tsao, "Floating and Diving Loops of ABA Triblock Copolymers in Lipid Bilayers and Stability Enhancement for Asymmetric Membranes," *Biomacromolecules*, 22, 494-503, 2021, (SCI, EI)

Conference Papers¹⁻⁶¹

1. **Yu-Jane Sheng**, "Enhancing rectification of a nano-swimmer system by multi-layered asymmetric barriers", 第十屆海峽兩岸生物學啟發的理論科學問題研討會, 上海、揚州, China, 2016(Jun)
2. **Yu-Jane Sheng**, "Enhancing rectification of a nano-swimmer system by multi-layered asymmetric barriers", 2016 年中華民國界面科學學會年會暨科技部化工學門成果發表會, 台北, Taiwan, 2016(Jun)
3. **Yu-Jane Sheng**, "Molecular Simulation of Physical Properties for Light Shield Ink", 2016 年中華民國界面科學學會年會暨科技部化工學門成果發表會, 台北, Taiwan, 2016(Jun)
4. **Yu-Jane Sheng**, "Solid-supported polymer bilayers formed by coil-coil block

- copolymers", 2016 台灣化學工程學會 63 週年慶祝大會暨科技部化學工程學門成果發表會, 中壢市國立中央大學, Taiwan, 2016(Nov)
5. **Yu-Jane Sheng**, "Molecular Simulation of Physical Properties for Light Shield Ink", 2016 台灣化學工程學會 63 週年慶祝大會暨科技部化學工程學門成果發表會, 中壢市國立中央大學, Taiwan, 2016(Nov)
 6. **Yu-Jane Sheng**, "Resisting and Pinning of a Nanodrop by Trenches on a Hysteresis-Free Surface", 2016 台灣化學工程學會 63 週年慶祝大會暨科技部化學工程學門成果發表會, 中壢市國立中央大學, Taiwan, 2016(Nov)
 7. **Yu-Jane Sheng**, "Solid-Supported Polymer Bilayer Formed by Coil-Coil Block Copolymers", 8th International conference on Advanced Materials and Nanotechnology (AMN8), Queenstown New Zealand, 2017(Feb)
 8. **Yu-Jane Sheng**, "Boundary-induced segregation in nanoscale thin films of athermal polymer blends", 8th International Conference on Advanced Materials and Nanotechnology (AMN8), Queenstown New Zealand, 2017(Feb)
 9. **Yu-Jane Sheng**, "Solid-Supported Polymer Bilayer Formed by Coil-Coil Block Copolymers", 8th International Conference on Advanced Materials and Nanotechnology (AMN8), Queenstown New Zealand, 2017(Feb)
 10. **Yu-Jane Sheng**, "Structural and mechanical properties of the membranes formed by amphiphilic ABA triblock copolymers", 2017 4th International Conference on Chemical and Food Engineering (ICCFE 2017), 大阪日本, 2017(Mar)
 11. **Yu-Jane Sheng**, "Meniscus Shape and Wetting Competition of a Drop between a Cone and a Plane", The European Colloid and Interface Society, Madrid Spain, 2017(Sep)
 12. **Yu-Jane Sheng**, "Extraordinarily Rapid Rise of Tiny Bubbles Sliding beneath Superhydrophobic Surfaces", The European Colloid and Interface Society, Madrid Spain, 2017(Sep)
 13. **Yu-Jane Sheng**, "The wetting behavior of polymeric drop on polymer brush surfaces", 2017 台灣化學工程學會 64 週年年會暨科技部化學工程學門成果發表會, 台北市國立台北科技大學, Taiwan, 2017(Nov)
 14. **Yu-Jane Sheng**, "Molecular Simulation Assisted Design of Block Copolymer Dispersants for Light-Shielding Inks", Japan-Taiwan Bilateral Symposium : Polymeric Materials for Future Vehicles. National Cheng Kung University, Tainan Taiwan, 2017(Nov), (Keynote Speaker)
 15. **Yu-Jane Sheng**, "Controlling Nanodrop Passage through Capillary Nanovalves by Adjusting Lyophilic Crevice Structure", 32st Conference of The European Colloid and Interface Society (ECIS 2018), Ljubljana Slovenia, 2018(Sep)
 16. **Yu-Jane Sheng**, "Smart Zwitterionic Sulfobetaine Silane Surfaces with Switchable Wettability for Aqueous/Nonaqueous Drops", 32st Conference of The European Colloid and Interface Society (ECIS 2018), Ljubljana Slovenia, 2018(Sep)

17. **Yu-Jane Sheng**, "Active particles in confined space.", 2018 台灣化學工程學會 65 週年年會暨科技部化學工程學門成果發表會., 雲林科技大學, Taiwan, 2018(Nov)
18. **Yu-Jane Sheng**, "Hybridization of Lipids to Monolayer and Bilayer Membranes of Triblock Copolymers", 10th Triennial Congress of the International Society for Theoretical Chemical Physics, 挪威特羅姆瑟, 2019(Jul)
19. **Yu-Jane Sheng**, "Partition of nanoswimmers between two immiscible phases: soft and penetrable boundary", 2019 台灣化學工程學會 66 週年年會暨科技部化學工程學門成果發表會, 東海大學, 2019(Nov)
20. **Yu-Jane Sheng**, "Strengthening mechanism of mechanical properties of graft copolymers with incompatible pendant groups: nano-cluster and weak cross-linking," 2020 界面研討會(2020 年 07 月 31 日 · 國立台灣大學鄭江樓)
21. **Yu-Jane Sheng**, "Perforated Vesicles of ABA Triblock Copolymers with ON/OFF-Switchable Nanopores," 台灣化學工程學會 67 週年年會暨科技部化學工程學門成果發表會。2020 年 10 月 23 日-10 月 24 日 · 清華大學。
22. **Yu-Jane Sheng**, "Strengthening mechanism of mechanical properties of graft copolymers with incompatible pendant groups: nano-cluster and weak cross-linking," 台灣化學工程學會 67 週年年會暨科技部化學工程學門成果發表會。2020 年 10 月 23 日-10 月 24 日 · 清華大學。

Honors and Others

1. 張弘郁同學 (諶玉真教授指導) 2014 台灣化學工程學會 61 週年年會暨科技部化學工程學門成果發表會學生英語專題報告競賽優勝獎
2. 榮獲臺灣大學 106 學年度教學優良獎
3. "Structural and Mechanical Characteristics of Polymersomes," 獲選為 2014 年 Soft Matter 之 Highlight
4. 2014 台灣化學工程學會 61 週年年會暨科技部化學工程學門成果發表會海報評審委員
5. 熱力與界面領域之邀請演講者 · 化工年會 · Nov. 6-7 · 高雄 · 台灣 (2015)
6. "Blending-induced helical morphologies of confined linear triblock copolymers," 獲選為 2016 年「台灣化學工程學會傑出論文獎」
7. 獲得 2011-2017 年國立臺灣大學學術研究績效獎勵

8. 2016 Fall Progress in Mathematical and Computational Studies on Science and Engineering Problems, invited speaker. Nov. 30 – Dec. 2 (2016)
9. One of the top 100 reviewers for Langmuir in 2016
10. 獲得 2018-2020 年國立臺灣大學學術研究績效加給
11. 王亭雅同學 (湛玉真教授指導)台灣化學工程學會 67 週年年會暨科技部化工學門成果發表會在學生競賽-學生口頭(Oral)競賽獲得優等(Excellence award)

