

Yu, Hsiu-Yu (游琇仔)

Associate Professor

B.S. in Chemical Engineering
National Taiwan University, 2004

M.S. in Chemical Engineering
National Taiwan University, 2006

Ph.D. in Chemical Engineering
Cornell University, 2012

Postdoctoral Associate
Cornell University, 2012

Postdoctoral Researcher
University of Pennsylvania, 2012-2016

Research and Professional Interests

Multiscale modeling for complex fluids

Colloidal hydrodynamics

Statistical mechanics

Journal Papers

1. **H.-Y. Yu**, Z. Jabeen, D. M. Eckmann, P. S. Ayyaswamy and R. Radhakrishnan, "Microstructure of Flow-Driven Suspension of Hardspheres in Cylindrical Confinement: A Dynamical Density Functional Theory and Monte Carlo Study", *Langmuir*, 33(42), 11332-11344, 2017(Oct), (SCI,EI), (IF: 3.9)
2. R. Radhakrishnan, **H.-Y. Yu**, D. M. Eckmann and P. S. Ayyaswamy, "Computational models for nanoscale fluid dynamics and transport inspired by nonequilibrium thermodynamics", *Journal of Heat Transfer*, 139(3), 330011-330019, 2017(Mar), (SCI,EI), (IF: 1.9)
3. Z. Jabeen, **H.-Y. Yu**, D. M. Eckmann, P. S. Ayyaswamy and R. Radhakrishnan, "Rheology of colloidal suspensions in confined flow: Treatment of hydrodynamic interactions in particle-based simulations inspired by dynamical density functional theory", *Physical Review E*, 98(4), 042602, 2018(Oct), (SCI,EI), (IF: 2.4)
4. Y.-W. Wu and **H.-Y. Yu**, "Adhesion of a polymer-grafted nanoparticle to cells explored using generalized Langevin dynamics", *Soft Matter*, 14(48), 9910-9922, 2018(Dec), (SCI,EI), (IF: 3.7)
5. C.-H. Tai and **H.-Y. Yu**, "Entropic effects in solvent-free bidisperse polymer brushes investigated using density functional theories", *Langmuir*, 35(51), 16835-16849, 2019(Dec), (SCI,EI), (IF: 3.9)
6. H.-T. Chung and **H.-Y. Yu**, "Binding of a Brownian nanoparticle to a thermally fluctuating membrane surface", *Physical Review E*, 101(3), 032604, 2020(Mar), (SCI,EI), (IF: 2.4)
7. L.-H. Chang and **H.-Y. Yu**, "Flow-driven release of molecules from a porous surface explored using dynamical density functional theory", *Journal of the Taiwan Institute of Chemical Engineers*, 117, 26-38, 2020(Dec), (SCI,EI), (IF: 5.3)
8. Y.-Y. Chang and **H.-Y. Yu***, "Structural and dynamical coupling in solvent-free polymer brushes elucidated by molecular dynamics simulations", *Langmuir*, 37, 3331-3345, 2021(Mar), (SCI,EI), (IF: 3.9)
9. D. Lin and **H.-Y. Yu***, "Deep learning and inverse discovery of polymer self-consistent

field theory inspired by physics-informed neural networks," *Phys. Rev. E*, 106, 014503, 2022(Jul), (SCI,EI), (IF: 2.7). <https://doi.org/10.1103/PhysRevE.106.014503>

10. Y.-J. Chen and **H.-Y. Yu***, "Enthalpic interactions and solution behaviors of solvent-free polymer brushes," *Polymers*, 14, 5237, 2022(Dec), (SCI,EI), (IF: 5.0). <https://doi.org/10.3390/polym14235237>

Conference Papers

1. **Hsiu-Yu Yu**, "Generalized Langevin equations for wall-mediated Brownian dynamics and adhesive kinetics of a nanoparticle", Complex Fluids Workshop, Taipei & Hsinchu Taiwan, 2017(Jun), (Invited speaker)
2. **Hsiu-Yu Yu**, "Predicting Phase Transitions of Self-Suspended Polymer-Grafted Nanoparticles", Interfacial Science Annual Meeting, Taipei Taiwan, 2017(Aug), (Invited speaker)
3. Guan-Ting Pan and **Hsiu-Yu Yu**, "Self-Consistent Field Theory for Interactions Between Solvent-Free Polymer-Grafted Nanoparticles", Taiwan ChE Annual Meeting, Taipei Taiwan, 2017(Nov)
4. Yu-Wen Wu and **Hsiu-Yu Yu**, "Langevin Dynamics of a Stealth Nanoparticle Close to a Wall", Taiwan ChE Annual Meeting, Taipei Taiwan, 2017(Nov)
5. **Hsiu-Yu Yu**, "Predictive Theoretical Modeling of Complex Fluids: From Advanced Functionalized Materials to Targeted Vascular Drug Delivery", Workshop on Next-Generation Eco-Production Systems by Young Researchers, Kobe Japan, 2018(Feb), (Invited speaker)
6. Yu-Wen Wu and **Hsiu-Yu Yu**, "Generalized Langevin Dynamics for Stealth Nanoparticle Adhesion to Membrane Surface", Biophysical Society Annual 62nd Meeting, San Francisco U.S.A., 2018(Feb)
7. Ching-Heng Tai and **Hsiu-Yu Yu**, "Equilibrium Structure and Interaction of Bidisperse Polymer Brushes", Interfacial Science Annual Meeting, Tainan Taiwan, 2018(Aug)
8. Yu-Wen Wu, Hsueh-Te Chung, and **Hsiu-Yu Yu**, "Generalized Langevin Dynamics for Adhesion of a Polymer-Grafted Nanoparticle to Cell", 2018 AIChE Annual Meeting, Pittsburgh U.S.A., 2018(Oct)
9. **Hsiu-Yu Yu**, "Adhesion of Polymer-Functionalized Nanoparticle to the Cell Membrane Explored Using Generalized Langevin Dynamics", 6th International Workshop on Process Intensification (IWPI 2018), Taipei Taiwan, 2018(Nov), (Invited speaker)
10. Hsueh-Te Chung and **Hsiu-Yu Yu**, "The Effect of Membrane Fluctuations on the Adhesion of a Brownian Particle to Cell", Taiwan ChE Annual Meeting, Yunlin Taiwan, 2018(Nov)
11. Chu-Yun Huang and **Hsiu-Yu Yu**, "Parameterization of Diblock Copolymers for Drug Carriers in Dissipative Particle Dynamics", Taiwan ChE Annual Meeting, Yunlin Taiwan, 2018(Nov)

12. Chu-Yun Huang and **Hsiu-Yu Yu**, "Structure and Dynamics of Nanoscale Ionic Materials Studied Using Molecular Dynamics", Taiwan ChE Annual Meeting, Yunlin Taiwan, 2018(Nov)
13. Chu-Yun Huang, Ming-Tsung Lee and **Hsiu-Yu Yu**, "Mesoscale Simulations for Micellization of Diblock Copolymers", APS March Meeting 2019, Boston U.S.A., 2019(Mar)
14. Hsueh-Te Chung and **Hsiu-Yu Yu**, "The Effect of Membrane Thermal Fluctuations on the Adhesion of a Brownian Nanoparticle to Cell Surface", 2019 Process System Engineering Symposium, Xitou Taiwan, 2019(May)
15. Yi-Yan Chang and **Hsiu-Yu Yu**, "Structure of Solvent-Free Polymer Brushes Studied Using Coarse-Grained Molecular Dynamics", Taiwan ChE Annual Meeting, Taichung Taiwan, 2019(Nov)
16. Yen-Ting Hsu and **Hsiu-Yu Yu**, "Atomistic Molecular Dynamics Simulations of Poly(tetrafluoroethylene) Melt", Taiwan ChE Annual Meeting, Taichung Taiwan, 2019(Nov)
17. Danny Lin and **Hsiu-Yu Yu**, "Machine Learning Approach to Solve Self-Consistent Field Equations for Polymeric Fluids", Taiwan ChE Annual Meeting, Taichung Taiwan, 2019(Nov)
18. Li-Hsuan Chang and **Hsiu-Yu Yu**, "Effect of Flow on the Release of Molecules from a Porous Surface", Taiwan ChE Annual Meeting, Taichung Taiwan, 2019(Nov)
19. Ching-Heng Tai, Yi-Yan Zhang and **Hsiu-Yu Yu**, "Structure and Interaction of Solvent-Free Bidisperse Polymer Brushes Investigated Using Mean-Field Theory and Molecular Simulations ", 2019 AIChE Annual Meeting, Orlando U.S.A., 2019(Nov)
20. Chu-Yun Huang and **Hsiu-Yu Yu**, "Characterization of Phase Diagram and Structural Properties of Diblock-Copolymer Self-Assemblies Using Dissipative Particle Dynamics Simulations", Taiwan ChE Annual Meeting, Hsinchu, Taiwan, 2020(Oct)
21. Che-Chi An and **Hsiu-Yu Yu**, "Structure of Hard-Sphere Suspensions in a Cylinder: Density-Functional Approach and Monte Carlo Simulations", Taiwan ChE Annual Meeting, Hsinchu, Taiwan, 2020(Oct)
22. Yung-Chi Fan and **Hsiu-Yu Yu**, "Single-Polymer Structure and Dynamics Investigated Using Brownian Dynamics Simulations", Taiwan ChE Annual Meeting, Hsinchu, Taiwan, 2020(Oct)
23. Kuan-Lin Lin and **Hsiu-Yu Yu**, "Effect of Receptor Flexural Rigidity on the Binding of a Nanoparticle to Cell", Taiwan ChE Annual Meeting, Hsinchu, Taiwan, 2020(Oct)
24. Danny Lin, Le-Chi Lin and **Hsiu-Yu Yu**, "Physics-Informed Neural Networks for Solving Polymer Self-Consistent Field Equations", The 9th Asian Symposium on Process Systems Engineering (PSE Asia 2020), Asynchronous Webinar, 2020(Nov)
25. **Hsiu-Yu Yu**, "Microstructure and Transport of Flow-Driven Hardsphere Suspensions: A Dynamical Density Functional Approach", Taiwan ChE Annual Meeting, Kaohsiung, Taiwan, 2022(Jan), (Invited speaker)

26. Le-Chi Lin and **Hsiu-Yu Yu**, “Representation of the Cahn-Hilliard Equation with the Physics-Informed Neural Network”, Taiwan ChE Annual Meeting, Kaohsiung, Taiwan, 2022(Jan)
27. Yi-Ju Chen and **Hsiu-Yu Yu**, “The Role of Enthalpic Interaction in the Structure and Chain Dynamics of Solvent-Free Binary Polymer Brushes”, Taiwan ChE Annual Meeting, Kaohsiung, Taiwan, 2022(Jan)
28. **Hsiu-Yu Yu**, “Membrane-Mediated Hydrodynamic Correlations for the Binding of a Ligand-Functionalized Nanoparticle to a Cell”, CTAM 2022, Kaohsiung, Taiwan, 2022(Nov), (Invited speaker)
29. Yun-Ru Chuang and **Hsiu-Yu Yu**, “Anomalous Diffusion in the Porous Microstructure Described by Continuous-Time Random Walks”, Taiwan ChE Annual Meeting, New Taipei, Taiwan, 2022(Dec)
30. Sheng-Jer Chen and **Hsiu-Yu Yu**, “Innovative Machine Learning Approaches for Predicting the Dynamics of the Phase-Field Microstructures”, Taiwan ChE Annual Meeting, New Taipei, Taiwan, 2022(Dec)

Honors and Others

1. Invited Special Issue Guest Editor, Polymers, MDPI [IF: 4.967; Rank 16/90 in Polymer Science] (2022-2023)
2. 指導學生陳聖哲同學，獲得台灣化學工程學會 69 週年年會學生英語演講競賽佳作 (2022)
3. 國立臺灣大學年度績優教師 (2022)
4. 指導學生王浩宇與郭俊佑同學，獲得臺大化工系 110 學年度松柏優秀學士專題競賽海報佳作 (2022)
5. 國立臺灣大學年度績優教師 (2021)
6. 國立臺灣大學學術研究績效獎勵 (2021)
7. 國立臺灣大學 108 學年度教學傑出教師 (2020)
8. 指導學生陳蕙如與林樂淇同學，獲得臺大化工系 108 學年度松柏優秀學士專題競賽海報佳作 (2020)
9. 國立臺灣大學學術研究績效獎勵 (2019)
10. 指導學生張力玄同學，獲得台灣化學工程學會 66 週年年會學生英語演講競賽-輸送現象及分離程序組佳作 (2019)

11. 科技部工程司化工學門優秀年輕學者計畫 (2019-2022)
12. 國立臺灣大學 107 學年度教學優良教師 (2019)
13. 國立臺灣大學學術研究績效獎勵 (2018)
14. Preparatory Committee, 2018 International Symposium on Transport Phenomena and Applications (STPA), Nov. 2018
15. Outstanding Reviewer, International Journal of Heat and Mass Transfer, Elsevier, Nov. 2018
16. Outstanding Reviewer, Journal of the Taiwan Institute of Chemical Engineers, Elsevier, Sep. 2018
17. 指導學生張力玄同學·獲得科技部 107 學年度大專學生專題研究計畫 (2018)
18. 指導學生潘冠廷同學·獲得台灣化學工程學會 64 週年年會壁報論文競賽-熱力與界面工程組傑出論文獎 (2017)
19. 指導學生吳聿文同學·獲得台灣化學工程學會 64 週年年會學生英語演講競賽-佳作論文獎 (2017)
20. 指導學吳聿文同學·獲得中華民國界面年會學生演講競賽佳作 (2017)
21. 科技部延攬特殊優秀人才獎勵 (2016-2019)
22. American Institute of Chemical Engineers, senior member
23. 台灣化工學會終身會員
24. 中華民國界面科學學會理事 (2017-2021)
25. 中華民國界面科學學會候補理事 (2021-2023)