Hsu, Jyh-Ping （徐治平）
Professor

B.S. in Chemical Engineering
National Taiwan University, 1977
M.S. in Chemical Engineering
Kansas State University, 1980
M.S. in Statistics
Kansas State University, 1983
Ph.D. in Chemical Engineering
Kansas State University, 1984

Research and Professional Interests
Colloid and Interface Science
Biotechnology and Bioengineering
Nano-technology
Wastewater Treatment

Journal Papers

1. Lin, J.Y., C.Y. Lin, **J.P. Hsu**, and S. Tseng, "Ionic Current Rectification in a pH-tunable Polyelectrolyte Brushes Functionalized Conical Nanopore: Effect of Salt Gradient", *Anal. Chem.*, 88, 1176-1187 (2016). (SCI,EI)

2. Tseng, S., Y.M. Li, C.Y. Lin, and **J.P. Hsu**, "Salinity Gradient Power: Influences of Temperature and Nanopore Size", *Nanoscale*, 8, 2350-2357 (2016). (SCI,EI)

3. Tseng, S., R.R. Su, and **J.P. Hsu**, "Modeling Reagent Release from an Inwardly Tapered Disk with a Central Hole", *J. Eng. Math.*, 98, 1-9 (2016). (SCI,EI)

4. Tseng, S., C.Y. Su, and **J.P. Hsu**, "Diffusiophoresis of a Charged, Rigid Sphere in a Carreau Fluid", *J. Colloid Interface Sci.*, 465, 54-57 (2016). (SCI,EI)

5. Tseng, S., Y.R. Hsu, and **J.P. Hsu**, "Diffusiophoresis of a Charged Toroidal Polyelectrolyte", *J. Colloid Interface Sci.*, 471, 14-19 (2016). (SCI,EI)

6. Qiu, Y., C.Y. Lin, P. Hinkle, T.S. Plett, C. Yang, J.V. Chacko, M.A. Digman, L.H. Yeh, **J.P. Hsu**, and Z.S. Siwy, "Highly Charged Particles Cause a Larger Current Blockage in Micropores Compared to Neutral Particles", *ACS Nano*, 10, 8413-8422 (2016). (SCI,EI)

7. Tseng, S., Y.M. Li, C.Y. Lin, and **J.P. Hsu**, "Salinity Gradient Power: Optimization of Nanopore Size", *Electrochimica Acta*, 219, 790-797 (2016). (SCI,EI)

8. **Hsu, J.P.**, J.T. Chen, K.Y. Chu, Y.H. Tu, L.Y. Huang, K.W. Chang, Y.C. Huang, S.S. Farn, S.H. Hsu, J.J. Lin, W.J. Lin, "Radiofluorination Process Development and Tau Protein Imaging Studies of [F-18]FEONM", *J. Taiwanese I. Ch. E.*, 68, 119-129 (2016). (SCI,EI)

9. Tseng, S., S.C. Lin, C.Y. Lin, and **J.P. Hsu**, "Influences of Cone Angle and Surface Charge Density on the Ion Current Rectification Behavior of a Conical Nanopore", *J. Phys. Chem. C*, 120, 25620-25627 (2016). (SCI,EI)

10. Lin, C.Y., F. Chen, L.H. Yeh, and **J.P. Hsu**, "Salt Gradient Driven Ion Transport in Solid-State Nanopores: The Crucial Role of Reservoir Geometry and Size", *PCCP*, 18, 30160-30165 (2016). (SCI,EI)

11. Tseng, S., S.H. Hsieh, and **J.P. Hsu**, "Diffusiophoresis of a pH-regulated Toroidal Polyelectrolyte in a Solution Containing Multiple Ionic Species", *J. Colloid Interface Sci.*, 486, 351-358 (2017). (SCI,EI)

12. **Hsu, J.P.**, Wu, H.H., C.Y. Lin, and S. Tseng, "Importance of Polyelectrolyte Modification for Rectifying the Ionic Current in Conically Shaped Nanochannels", PCCP, 19, 5351-5360 (2017). (SCI,EI)

13. **Hsu, J.P.**, S.T. Yang, C.Y. Lin, and S. Tseng, "Ionic Current Rectification in a Conical Nanopore: Influences of Electroosmotic Flow and Type of Salt", *J. Phys. Chem. C*, 121, 4576-4582 (2017). (SCI,EI)

14. **Hsu, J.P.**, Y.R. Hsu, and S. Tseng, "Separation of Charge-regulated Polyelectrolytes by pH-assisted Diffusiophoresis", *PCCP*, PCCP, 19, 9059-9063 (2017). (SCI,EI)

15. **Hsu, J.P.**, H.H., Wu, C.Y. Lin, and S. Tseng, "Ion Current Rectification Behavior of Bioinspired Nanopores Having a pH-Tunable Zwitterionic Surface", *Anal. Chem*., 89, 3952-3958 (2017). (SCI,EI)

16. **Hsu, J.P.**, S.H. Hsieh, and S. Tseng, "Diffusiophoresis of a pH-regulated Polyelectrolyte in a pH-regulated Nanochannel", *Sensors & Actuators B*, 252, 1132-1139 (2017). (SCI,EI)

17. **Hsu, J.P.**, Y.Y. Chu, and S. Tseng, "Sedimentation of a pH-regulated Nanoparticle in a Generalized Gravitational Field", *J. Phys. Chem. C*, 121, 24272-24281 (2017). (SCI,EI)

18. **Hsu, J.P.**, S.C. Lin, C.Y. Lin, and S. Tseng, "Power Generation by a pH-regulated Conical Nanopore through Reverse Electrodialysis", *J. Power Sources*, 366, 169-177 (2017). (SCI,EI)

19. **Hsu, J.P.**, T.W. Lin, C.Y. Lin, and S. Tseng, "Salt Dependent Ion Current Rectification in Conical Nanopores: Impact of Nanopore Geometry", *J. Phys. Chem. C*, 121, 28139-28147 (2017). (SCI,EI)

20. Lin, C.Y., **J.P. Hsu**, and L.H. Yeh, "Rectification of Ionic Current in Nanopores Functionalized with Bipolar Polyelectrolyte Brushes", *Sensors & Actuators B*, 258, 1223-1229 (2018). (SCI,EI)

21. Zou J., S. Wu, Y. Liu, Y. Sun, Y, Cao, **J.P. Hsu**, and A. Wee, "An Ultra-sensitive Electrochemical Sensor Based on 2D g-C3N4/CuO Nanocomposites for Dopamine Detection", *Carbon*, 130, 652-663 (2018). (SCI,EI)

22. **Hsu, J.P.**, Y.M. Chen, S.T. Yang, C.Y. Lin, and S. Tseng, "Influence of Salt Valence on the Ionic Current Rectification Behavior of a Conical Nanochannel", *J. Colloid Interface Sci.*, 531, 483-492 (2018). (SCI,EI)

23. **Hsu, J.P.**, Y.C. Chen, Y.M. Chen, and S. Tseng, "Influence of Temperature and Electroosmotic Flow on the Rectification Behavior of Conical Nanochannels", *J. Taiwanese I. Ch. E.*, 93, 142-149 (2018). (SCI,EI)

24. Lee, Y.J., Y.J. Chang, D.J. Lee, **J.P. Hsu**, "Water Stable Metal-organic Framework as Adsorbent from Aqueous Solution: A mini-review", *J. Taiwanese I. Ch. E*., 93, 176-183 (2018). (合著) (SCI,EI)

25. **Hsu, J.P.**, Y.Y. Chu, C.Y. Lin, S.T. Yang, and S. Tseng, "Ion Transport in a pH-Regulated Conical Nanopore Filled with a Power-law Fluid", *J. Colloid Interface Sci.*, 537, 358-365 (2019). (SCI,EI)

26. **Hsu, J.P.**, T.C. Su, C.Y. Lin, and S. Tseng, "Power Generation from a pH-regulated Nanochannel through Reverse Electrodialysis: Effects of Nanochannel Shape and Non-uniform H^+ Distribution", *Electrochimica Acta*, 294, 84-92 (2019). (SCI,EI)

27. **Hsu, J.P.**, S.T. Yang, C.Y. Lin, and S. Tseng, "Voltage-controlled Ion Transport and Selectivity in a Conical Nanopore Functionalized with pH-tunable Polyelectrolyte Brushes", *J. Colloid Interface Sci.*, 537, 496-504 (2919). (SCI,EI)

28. Lin, T.W., **J.P. Hsu**, C.Y. Lin, and S. Tseng, "Dual pH-gradient and Voltage Modulation of Ion Transport and Current Rectification in Biomimetic Nanopores Functionalized with pH-tunable Polyelectrolyte", *J. Phys. Chem. C*, 123, 12437-12443 (2019) (Cover Story). (SCI,EI)

29. **Hsu, J.P.**, Y.M. Chen, C.Y. Lin, and S. Tseng, "Electrokinetic Ion Transport in an Asymmetric Double-Gated Nanochannel with a pH-Tunable Zwitterionic Surface", *PCCP*, 21, 7773-7780 (2019). This article is part of the themed collection: 2019 PCCP HOT Articles (SCI,EI)

30. Yang, J.T., Y.C. Kuo, I.Y. Chen, R. Rajesh, Y.I. Lou, and **J.P. Hsu**, "Protection against Neurodegeneration in the Hippocampus Using Sialic Acid- and 5-HT-Moduline-Conjugated Lipopolymer Nanoparticles", *ACS Biomaterials Science & Engineering*, 5, 1311-1320 (2019). (SCI,EI)

31. Lin, C.Y., E.T. Acar, J.W. Polster, K. Lin, **J.P. Hsu**, and Z.S., Siwy, "Modulation of Charge Density and Charge Polarity of Nanopore Wall by Salt Gradient and Voltage", *ACS Nano*, 13, 9868-9879 (2019). (SCI,EI)

32. Ren, Y.J., H.Y. Du, C.Y. Du, J. Chen, W. Li, W. Qiu, **J.P. Hsu**, and J.Z. Jiang, "Influence of Oxygen Adsorption on the Chemical Stability and Conductivity of Transition Metal Ceramic Coatings: First-principle Calculations", *App. Sur. Sci*., 495, 143530 (2019). (SCI,EI)

33. Kuo, Y.C., R. Rajesh, and **J.P. Hsu**, "Electrophoretic Mobility of Neuron-like Cells Regenerated from iPSCs with Induction of Retinoic acid- and Nerve Growth Factor-loaded Solid Lipid Nanoparticles", *J. Taiwanese I. Ch. E.*, 103, 167-176 (2019). (SCI,EI)

34. Huang, W.C. and **J. P. Hsu**, "Regulating the Ionic Current Rectification Behavior of Branched Nanochannels by Filling Polyelectrolytes", *J. Colloid Interface Sci.*, 557, 683-690 (2019). (SCI,EI)

35. **Hsu, J.P.**, T.C. Su, P.H. Peng, S.C. Hsu, M.J. Zheng, L.H. Yeh, "Unraveling the Anomalous Surface-Charge-Dependent Osmotic Power Using a Single Funnel-Shaped Nanochannel", *ACS Nano*, 13, 13374-13381 (2019). (SCI,EI)

36. Weng, Y.T, H.W. Liu, A. Pei, F.F. Shi, H. Wang, S. Lin, S.S. Huang, L.Y. Su, **J.P. Hsu**, C.C. Fang, Y. Cui, and N.L. Wu, "An Ultrathin Ionomer Interphase for High-Efficiency Li Anode in Carbonate-Based Electrolyte", *Nature Commun.*, 10, 5824 (2019). (SCI,EI) (合著)

37. Lin, T.W. and **J.P. Hsu**, "Pressure-Driven Energy Conversion of Conical Nanochannels: Anomalous Dependence of Power Generated and Efficiency on pH", *J. Colloid Interface Sci*., 564, 491-498 (2019). (SCI,EI)

38. Lin, C.Y., T. Ma, Z.S. Siwy, S. Balme, and **J.P. Hsu**, "Tunable Current Rectification and Selectivity Demonstrated in Nanofluidic Diodes through Kinetic Functionalization", *J. Phys. Chem. Lett.*, 11, 60-66 (2020). (SCI,EI)

39. Wang C.Y., Y.J. Lee, **J.P. Hsu**, and D.J. Lee, "Phosphate or Arsenate Modified UiO-66-NO2: Amorphous Mesoporous Matrix", *J. Taiwanese I. Ch. E.*, 108, 129-133

(2020). (合著)

40. **Hsu, J.P.,** Y.C. Chen, and C.T. Wu, "Detection of the Trace Level of Heavy Metal Ions by pH-regulated Conical Nanochannels", *J. Taiwanese I. Ch. E.*, 109, 145-152 (2020).

41. Yen, W.K., W.C. Huang, and **J.P. Hsu,** "Ion Current Rectification Behavior of a Nanochannel Having Nonuniform Cross Section", *Electrophoresis*, 41, 802-810 (2020).

42. Tsou, T.Y. and **J.P. Hsu**, "Pressure-Driven Ion Separation through a pH-regulated Cylindrical Nanopore", J. Mem. Sci., 604 118073 (2020).

43. Wu, C.T and J.P. Hsu, "Estimating the Thermodynamic Equilibrium Constants of Metal Oxide Particles through Electrophoresis", J. Colloid Interface Sci., 574 293-299 (2020).

44. Huang, W.C. and **J.P. Hsu**, "Ultrashort Nanopores of Large Radius Can Generate Anomalously High Salinity Gradient Power", Electrochimica Acta, 353, 136613 (2020).

45. Zou, J., W. Deng, J. Jiang, Arramel, X. He, N. Li, J. Fang, and **J.P. Hsu**, "Built-in Electric Field-assisted Step-scheme Heterojunction of Carbon Nitride-copper Oxide for Highly Selective Electrochemical Detection of p-nonylphenol", Electrochimica Acta, 354, 136658 (2020).

46. Wu, C.T. and J.P. Hsu, "Electrokinetic Behavior of Bullet-shaped Nanopores Modified by Functional Groups: Influence of Finite Thickness of Modified Layer", J. Colloid Interface Sci., 582, 741-751 (2021).

47. Lee, Y.J., Y.J. Chang, and **J.P. Hsu**, "Amorphous Mesoporous Matrix from Metal-organic Framework UiO-66 Template with Strong Nucleophile Substitution", Chemsphere, in press.

48. Yen, Wei-Kuan and J.P. Hsu, "Electrokinetic Behavior of a pH-regulated Dielectric Cylindrical Nanopore", J. Colloid Interface Sci., in press.

Conference Papers

1. Wu, H.H., C.Y. Lin, **J.P. Hsu**, and S. Tseng, "Ionic Transport in a Polyelectrolyte-modified Conical Nanopore", 22th International Congress of Chemical and Process Engineering, Aug. 27-31, 2016, Prague, Czech.

2. Hsu, Y.R., **J.P. Hsu**, and S. Tseng, "Diffusiophoresis of an Isolated, Charged Toroidal Polyelectrolyte", 22th International Congress of Chemical and Process Engineering, Aug. 27-31, 2016, Prague, Czech.

3. Tseng, S., Y.M. Li, C.Y. Lin, and **J.P. Hsu**, "Influence of Nanopore Size on the Performance of Salinity Gradient Power", PRiME 2016, Oct. 2-7, 2016, Honolulu, Hawaii.

4. Yang, S.T., C.Y. Lin, **J.P. Hsu**, and S. Tseng, "Ionic Current Rectification in a Conical Nanopore: Influence of Salt", PRiME 2016, Oct. 2-7, 2016, Honolulu, Hawaii.

5. Hou-Hsueh Wu, H.H. C.Y. Lin, S. Tseng, and **J.P. Hsu**, "Ionic current rectification in a Polyelectrolyte-modified Conical Nanopore", 2016 AIChE Annual Meeting, San Francisco, Nov. 13-18, 2016.

6. Hsieh, S.H., **J.P. Hsu**, and S. Tseng, “Diffusiophoresis of a pH-regulated Toroidal Polyelectrolyte in a Solution Containing Multiple Ionic Species”, 2016 AIChE Annual Meeting, San Francisco, Nov. 13-18, 2016.

7. **Hsu, J.P.** and S.H. Hsieh, "DiffusiophoresSolution Containing Multiple Ionic Species", The 2016 Intl. Symp. on Transport Phenomena and Applications, Zhongli District, Taoyuan, Taiwan, ROC, Nov. 26, 2016.

8. **Hsu, J.P.** and S.T. Yang, "Ionic Current Rectification in a Conical Nanopore: Different Types of Salt", Intl. Symp. Transport Phenomena and Applications, Zhongli District, Taoyuan, Taiwan, ROC, Nov. 26, 2016.

9. Tseng, S., Y.M. Li, C.Y. Lin, and **J.P. Hsu**, “Influence of Nanopore Size on the Performance of Salinity Gradient Power”, PRiME 2016, Oct. 2-7, 2016, Honolulu, Hawaii.

10. Yang, S.T., C.Y. Lin, **J.P. Hsu**, and S. Tseng, “Ionic Current Rectification in a Conical Nanopore: Influence of Salt”, PRiME 2016, Oct. 2-7, 2016, Honolulu, Hawaii.

11. Hou-Hsueh Wu, H.H. C.Y. Lin, S. Tseng, and **J.P. Hsu**, “Ionic current rectification in a Polyelectrolyte-modified Conical Nanopore”, 2016 AIChE Annual Meeting, San Francisco, Nov. 13-18, 2016.

12. Hsieh, S.H., **J.P. Hsu**, and S. Tseng, “Diffusiophoresis of a pH-regulated Toroidal Polyelectrolyte in a Solution Containing Multiple Ionic Species”, 2016 AIChE Annual Meeting, San Francisco, Nov. 13-18, 2016.

13. Tseng, S., S.C. Lin, C.Y. Lin, and **J.P. Hsu**, "Ion Current Rectification Behaviour of Conical Nanopores: Effects of Cone Angle and Surface Charge Density", The 2017 Intl. Symp. on Transport Phenomena and Applications, Taipei, Taiwan, ROC, Nov. 17-18, 2017.

14. Tseng, S., Y.R. Hsu, and **J.P. Hsu**, "Salt Gradient Driven of a pH-regulated Polyelectrolyte Assisted by a pH Gradient", The 2017 Intl. Symp. on Transport Phenomena and Applications, Taipei, Taiwan, ROC, Nov. 17-18, 2017.

15. Hsu Y.R. and **J.P. Hsu**, “Separation of Charge-regulated Polyelectrolytes by pH-assisted Diffusiophoresis”, The 2nd International Conference on Molecular Biology and Biotechnology, PAUM Clubhouse, Kuala Lumpur, Malaysia, Nov. 1-2, 2017.

16. Tseng, S., Y.R. Hsu, and **J.P. Hsu**, "Salt Gradient Driven of a pH-regulated Polyelectrolyte Assisted by a pH Gradient", The 2017 Intl. Symp. on Transport Phenomena and Applications, Taipei, Taiwan, ROC, Nov. 17-18, 2017.

17. **Hsu, J.P.**, S.T. Young, C.Y. Lin, and S. Tseng, “Ion Transport in a pH-tunable Polyelectrolyte Modified Conical Nanopore”, 23th International Congress of Chemical and Process Engineering, Aug. 25-29, 2018, Prague, Czech.

18. Chen, Y.M., **J.P. Hsu**, and S. Tseng, “Influence of Salt Valence on the Rectification Behavior of Nanochannels”, 23th International Congress of Chemical and Process Engineering, Aug. 25-29, 2018, Prague, Czech.

19. Lin, T.W., **J.P. Hsu**, C.Y. Lin, and S. Tseng, “Ion Transport and Current Rectification in Nanopores Subject to Dual pH-Gradient and Voltage Bias”, 13th International Symposium on Electrokinetics (ELKIN 2019), June 12-14, 2019, Boston, USA.

20. **Hsu, J.P.**, Y.M. Chen, C.Y. Lin, and S. Tseng, “Electrokinetic Ion Transport in an

Asymmetric Double-gated Nanochannel", 13th International Symposium on Electrokinetics (ELKIN 2019), June 12-14, 2019, Boston, USA.

21. **Hsu, J.P.**, T.C. Su, and S. Tseng, "Power Generation from a pH-regulated Nanochannel through Reverse Electrodialysis: Shape Factor", 18th Asian Pacific Confederation of Chemical Engineering Congress (APCChE 2019), September 23-27, 2019, Sapporo, Japan.

Books

1. Yeh, L. H. and **J. P. Hsu**, "Electrophoretic Behavior of pH-Regulated Soft Biocolloids", H. Ohshima, Ed., John Wiley, New York, 2015.

2. Kuo, Y. C. and **J. P. Hsu**, "The Structure and Regulation of the Blood–brain Barrier", in Electrophoretic Behavior of pH-Regulated Soft Biocolloids, H. Ohshima, Ed., John Wiley, New York, 2015.

Honors and Others

1. 英國皇家化學學會會士 (終生)

2. 傑出人才基金會傑出人才講座, 2013-2016.

3. 分散相系統實驗室(**徐治平**教授主持)發表論文(Ionic Current Rectification in a pH-tunable Polyelectrolyte Brushes Functionalized Conical Nanopore: Effect of Salt Gradient, Anal. Chem., 88, 1176, 2016)獲選刊登在 Analytical Chemistry 期刊封面

4. 分散相系統實驗室(**徐治平**教授主持)發表論文(Dual pH-gradient and Voltage Modulation of Ion Transport and Current Rectification in Biomimetic Nanopores Functionalized with pH-tunable Polyelectrolyte, J. Phys. Chem. C, 123, 12437-12443, 2019)獲選刊登在 J. Phys. Chem. C 期刊封面

5. 分散相系統實驗室(**徐治平**教授主持)發表論文(Electrokinetic Ion Transport in an Asymmetric Double-Gated Nanochannel with a pH-Tunable Zwitterionic Surface, PCCP, 21, 7773-7780, 2019). 獲選 2019 PCCP HOT Articles

6. 台大講座教授, 2020-