Chao, Ling （趙 玲）

Professor

B.S. in Chemical Engineering
National Taiwan University, 2003
Ph.D. in Chemical Engineering
Massachusetts Institute of Technology, 2009
Postdoc in Biomolecular and Chemical Engineering
Cornell University, 2009-2011

Research and Professional Interests
Phase transformation of bio-membranes
Cell membrane mimic bio-chips

Journal Papers

1. U-Ting Chiu, and **Ling Chao***, "Electron transfer through protein-bound water and its bioelectronic application", ***Biosensors and Bioelectronics***, 2019, 136, 16-22 (SCI, IF: 9.5)

2. Shu-Kai Hu, Fang-Yen Lo, Chih-Chen Hsieh, and **Ling Chao***, "Sensing Ability and Formation Criterion of Fluid Supported Lipid Bilayer Coated Graphene Field-Effect Transistors", *ACS Sensors*, 2019, 4 (4), 892–899 (SCI, IF: 6.9) (featured on the cover page of Volume 4, Issue 4, 2019)

3. U-Ting Chiu, Bo-Fan Lee, Shu-Kai Hu, Ting-Feng Yu, Wen-Ya Lee*, and **Ling Chao***, "Graphene Memory Based on a Tunable Nanometer-Thin Water Layer", *J. Phys. Chem. C*, 2019, 12317, 10842-10848 (SCI, IF: 4.5) (featured on the cover page of Volume 123, Issue 17, 2019)

4. Shao-Wei Lyu, Jou-Fang Wang, and **Ling Chao*, "**Constructing Supported Cell Membranes with Controllable Orientation", 2019, *Scientific Reports* volume 9: 2747, p1-p8 (SCI, IF: 4.5)

5. Yu-Ling Shih*, Ling-Ting Huang, Yu-Ming Tu, Bo-Fan Lee, Yu-Chiuan Bau, Chia Yee Hong, Hsiao-lin Lee, Yan-Ping Shih, Min-Feng Hsu, Zheng-Xin Lu, Jui-Szu Chen, and **Ling Chao***, "Active Transport of Membrane Components by Self-Organization of the Min Proteins", *Biophysical Journal*, 2019, 116, 1469–1482 (SCI, IF: 3.8) (featured on the cover page of Volume 116, Issue 8, 2019)

6. Po-Chieh Chiang, Kevin Tanady, Ling-Ting Huang, and **Ling Chao***, "Rupturing Giant Plasma Membrane Vesicles to Form Micron-sized Supported Cell Plasma Membranes with Native Transmembrane Proteins", *Scientific Reports*, 2017, 7: 15139

7. B Lin, S Tsao, Alex Chen, Shu-Kai Hu, **Ling Chao**, and PG Chao*, "Lipid rafts sense and direct electric field-induced migration", *Proceedings of the National Academy of Sciences(PNAS)*, 2017, 114 (32), 8568-8573

8. Hsing-Ying Tung, Ting-Pi Sun, Ho-Yi Sun, Zhen-Yu Guan. Shu-Kai Hu, **Ling Chao**, and Hsien-Yeh Chen*, "Construction and control of 3D porous structure based on vapor deposition on sublimation solids", *Applied Materialstoday*, 2017, Volume 7, 77-81

9. Yoshihisa Kaizuka*, Tomoto Ura, Shaowei Lyu, **Ling Chao**, Joel Henzie, and Hidenobu Nakao, "Cytosolic Transport of Nanoparticles through Pressurized Plasma Membranes for Molecular Delivery and Amplification of Intracellular Fluorescence" *Langmuir*, 2016, 32 (50), pp 13534–13545 (IF: 4.3) (SCI)

10. Ling-Ting Huang and **Ling Chao***, “The flow patterning capability of localized natural convection”, *Phys. Chem. Chem. Phys.*, 2016, 18, 25380-25387 (SCI, IF: 4.45)

11. Shu-Kai Hu, Ling-Ting Huang and **Ling Chao***, “Membrane species mobility under in-lipid-membrane forced convection”, *Soft Matter*, 2016, 12, 6954-6963 (SCI, IF: 3.8)

Conference Papers

1. **Ling Chao***, “Development of label-free biosensors to study membrane proteins in their native bilayer environment.” GCBME & TSBME 2020, Nov.13, Taipei, 2020 (invited speaker)

2. **Ling Chao***, “發展細胞膜電泳平臺以研究膜蛋白的擴散係數與電學性質”, Taiwan ChE Annual Meeting, Oct. 24, Hsinchu, Taiwan, 2020 (invited speaker)

3. Shu-Kai Hu, and **Ling Chao***, “Sensing Ability of Fluid Supported Lipid Bilayer Coated Graphene Field-Effect Transistors” , the 14th Asian Congress on Biotechnology, ACB 2019), July 01-04, Taipei, Taiwan, 2019 (invited speaker)

4. Jheng Jie Hong, **Ling Chao***, “Reversing the Membrane Protein Orientation by a Gelatin Blotting Method”, the 14th Asian Congress on Biotechnology, ACB 2019), July 01-04, Taipei, Taiwan, 2019

5. Bo Chuan Huang, **Ling Chao***, “Measuring Diffusivity and Charge of Membrane Protein GLIT1 in a Supported Cell Membrane Platform”, the 14th Asian Congress on Biotechnology, ACB 2019), July 01-04, Taipei, Taiwan, 2019

6. Ching-Chun Huang, **Ling Chao***, Detection of Membrane Protein Structural Changes in Supported Plasma Membranes by Raman Spectroscopy”, the 14th Asian Congress on Biotechnology, ACB 2019), July 01-04, Taipei, Taiwan, 2019

7. Bo-Fan Lee, **Ling Chao***, “Using Thylakoid Lipid Membranes to Convert Light to Electrical Signals for Bio-applications”, BPS annual meeting, March 02-06, Baltimore, Maryland, USA, 2019

8. Kevin Tanady, Akhtar Fikri Kurniawan, Ling-Ting Huang, and **Ling Chao***, “Attachment of Calcium Oxalate Monohydrate Crystals Induces Formation of New Phases in Supported Lipid Bilayers”, BPS annual meeting, March 02-06, Baltimore, Maryland, USA, 2019

9. Zheng-Xian Lu, **Ling Chao***, “Development of Hydrogel Supported Cell Plasma Membranes” BPS annual meeting, March 02-06, Baltimore, Maryland, USA, 2019

10. Zheng-Xian Lu, **Ling Chao***, "Development of Hydrogel Supported Cell Plasma Membranes", The 24th Symposium of Young Asian Biochemical Engineer’s Community (YABEC 2018), Nov. 15-17, Taipei, Taiwan, 2018

11. Bo-Fan Lee, **Ling Chao***, "Using Thylakoid Lipid Membranes to Convert Light to Electrical Signals for Bio-applications", Taiwan ChE Annual Meeting, Nov. 9-10, Yunlin, Taiwan, 2018

12. Kevin Tanady, Akhtar Fikri Kurniawan, Ling-Ting Huang, and **Ling Chao***, “Attachment of Calcium Oxalate Monohydrate Crystals Induces Formation of New Phases in Supported Lipid Bilayers”, Taiwan ChE Annual Meeting, Nov. 9-10, Yunlin, Taiwan, 2018

13. Zheng-Xian Lu, **Ling Chao***, "Development of Hydrogel Supported Cell Plasma Membranes", Taiwan ChE Annual Meeting, Nov. 9-10, Yunlin, Taiwan, 2018

14. Kai-Hung Hsiao, **Ling Chao***, “Using Magnetic Field to Move Membrane Proteins in Supported Cell Plasma Membranes”, BPS annual meeting, February 11-15, New Orleans, US, 2017

15. Kai-Hung Hsiao, **Ling Chao***, “Using Magnetic Field to Move Membrane Proteins in Supported Cell Plasma Membranes”, Taiwanese Interface Society annual meeting, August 23, Taipei, Taiwan, 2017

16. U-Ting Chiu, **Ling Chao***, "Using a Light-Driven Proton Pump Protein to Develop Devices for Photocurrent Generation", BPS annual meeting, February 11-15, New Orleans, US, 2017

17. Shao-Wei Lyu, **Ling Chao***, “Using cell membrane blebs induced by hypertonic buffer to form supported membrane platforms with native membrane proteins”, BPS annual meeting, February 11-15, New Orleans, US, 2017

18. Shao-Wei Lyu, **Ling Chao***, “Controlling membrane protein topology on a supported plasma membrane platform”, Taiwanese Interface Society annual meeting, August 23, Taipei, Taiwan, 2017

19. Yu-Ting Lin, Cheng-Jung Kuo, **Ling Chao***, “Development of a surface plasmon resonance and plasmon-waveguide resonance combined chip for studying the transport behaviors of cell membrane transport proteins”, Taiwan ChE annual meeting, Nov. 26, Taoyuan, Taiwan, 2016

20. Shao-Wei Lyu, **Ling Chao***, “Using Cell Membrane Blebs Induced by Hypertonic Buffer to Form Supported Membrane Platforms with Native Membrane Proteins”, Taiwan ChE annual meeting, Nov. 26, Taoyuan, Taiwan, 2016

21. Kai-Hung Hsiao, **Ling Chao***, “Using Magnetic Field to Purify Membrane Proteins in Supported Cell Plasma Membranes”, Taiwan ChE annual meeting, Nov. 26, Taoyuan, Taiwan, 2016

22. Yu-Ting Lin, Cheng-Jung Kuo, **Ling Chao***, “Development of a surface plasmon resonance and plasmon-waveguide resonance combinbed chip for studying the transport behaviors of cell membrane transport proteins”, AIChE annual meeting, November 13-18, San Francisco, US, 2016

23. Ting-Chun Lu, **Ling Chao***, “Using plasma waveguide resonance spectroscopy to study the conformational change of membrane proteins”, AIChE annual meeting, Nov. 13-18, San Francisco, US, 2016

24. **Ling Chao***, “Development of lipid bilayer platforms for performing various separation processes to purify cell membrane bound species”, invited talk in the 22nd Symposium of Young Asian Biological Engineers' Community, Oct. 27-29, Miyazaki city, Japan, 2016

25. **Ling Chao***, “Development of lipid bilayer platforms for performing various separation processes to purify cell membrane bound species”, invited keynote speaker at the international symposium in the 67th divisional meeting on colloid and interface held by the Chemical Society of Japan, Sep 22-24, Asahikawa, Japan, 2016

26. Hong-Chia Yee, **Ling Chao***, “Non-Specific Binding Site on Lipid Membrane Induced by Phospholipase A2”, Annual Meeting of the Chinese Colloid and Interface Society, Jun 24, Taipei, Taiwan, 2016

27. Jou-Fang Wang, **Ling Chao***, “Development of Cell Plasma Membrane Platforms to Study Membrane Proteins”, annual meeting of the Chinese Colloid and Interface Society, Jun 24, Taipei, Taiwan, 2016

28. Ling-Ting Huang, **Ling Chao***, “Pattern Resolution of Flow Induced by Spatially-Designed Nature Convection”, annual meeting of the Chinese Colloid and Interface Society, Jun 24, Taipei, Taiwan, 2016

29. Po-Chieh Chiang, **Ling Chao***, “Using Giant Plasma Membrane Vesicles from Cells to form Supported Lipid Bilayers”, Biophysical Society (BPS) Annual Meeting, Feb. 27-Mar. 2, L.A., USA, 2016

Patents

1. Susan Daniel, **Ling Chao**, “Devices for Sorting, Classifying, and Assaying Partition Behavior of Cell Membrane Biomolecules and Methods Based Thereon” WO/2011/160071, Dec. 22, 2011, US2013/0095512 A1, Apr. 23, 2013

2. Chung-Ta Han and **Ling Chao**, “Biologic Sensing Platforms and Methods of Fabricating the Same” TW201614075, 14-08, I554612

3. Cheng-Rung Kuo and **Ling Chao**, “Chip for Monitoring Transportation Behavior and Method for Monitoring Transportation Behavior with the Same” I589855

Honors and Others

1. 獲得第十一屆台灣女科學家新秀獎(2018)

2. 擔任scientific reports 之編委會委員(editorial board member)

3. 國立台灣大學教學優良獎(2018)

4. 獲得傑出人才基金會頒發的年輕學者創新獎(2017)

5. 獲得日本化學學會頒發的 “Lectureship Award 2017”

6. 獲得科技部2016優秀年輕學者計畫

7. 台灣化工學會2015年優秀年輕學者

8. 台灣化工學會2015年化工傑作獎

9. Lab on a chip 期刊封面+2014 熱門文章

10. 指導專題生詹雅筑同學獲得科技部106年度大專學生研究計畫研究創作獎

11. 指導林郁婷同學參與2016台灣化學工程學會六十三週年慶祝大會暨科技部化學工程學門成果發表會榮獲英文報告競賽優勝

12. 指導呂紹瑋同學參與2016台灣化學工程學會六十三週年慶祝大會暨科技部化學工

程學門成果發表會榮獲壁報論文競賽生化與生醫組優勝

13. 指導蕭凱鴻同學參與2016台灣化學工程學會六十三週年慶祝大會暨科技部化學工程學門成果發表會榮獲壁報論文競賽輸送現象及其應用國際研討會組優勝

14. 指導邱鈺婷同學參與2016台灣化學工程學會六十三週年慶祝大會暨科技部化學工程學門成果發表會榮獲壁報論文競賽熱力及界面工程組佳作

15. 指導洪嘉怡同學參與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榮獲最佳論文優等獎

16. 指導王柔方同學參與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榮獲壁報論文優等獎

17. 指導胡書愷同學參與台灣化學工程學會六十二週年年會暨國科會化學工程學門成果發表會榮獲研究生英語專題報告競賽組佳作

18. 指導胡書愷同學參與2015年台灣生物化學工程學會舉辦之生物科技和工程會議榮獲英文口頭報告競賽生物感測組第一名