

**Chien, I-Lung** ( 錢義隆 )

Professor

B.S., Chemical Engineering  
National Taiwan University, 1977

Ph.D., Chemical Engineering  
University of California,  
Santa Barbara, 1985

**Research and Professional Interests**

Design and Control of Chemical and  
Energy-Related Processes  
Design and Control of Biorenewables-Based  
Processes and Separation Systems

**Journal Papers**

1. W. L. Chang and **I. L. Chien**, "Energy-Saving Design and Control of a Methyl Methacrylate Separation Process", *Industrial & Engineering Chemistry Research*, 55(11), 3064-3074, 2016(Mar), (SCI,EI), Corresponding Author
2. Y. C. Chen, B. Y. Yu, C. C. Hsu and **I. L. Chien**, "Comparison of heteroazeotropic and extractive distillation for the dehydration of propylene glycol methyl ether", *Chemical Engineering Research & Design*, 111, 184-195, 2016(Jul), (SCI,EI), Corresponding Author
3. B. Y. Yu and **I. L. Chien**, "Design and Optimization of the Methanol-to-Olefin Process Part I: Steady-State Design and Optimization", *Chemical Engineering & Technology*, 39(12), 2293-2303, 2016(Dec), (SCI,EI), Corresponding Author
4. B. Y. Yu and **I. L. Chien**, "Design and Optimization of the Methanol-to-Olefin Process Part II: Comparison of Different Methods for Propylene/Propane Separation", *Chemical Engineering & Technology*, 39(12), 2304-2311, 2016(Dec), (SCI,EI), Corresponding Author
5. W. L. Chang and **I. L. Chien**, "Potential for Significant Energy-Saving via Hybrid Extraction-Distillation System: Design and Control of Separation Process for n-Propanol Dehydration", *Industrial & Engineering Chemistry Research*, 55(43), 11291-11304, 2016(Nov), (SCI,EI), Corresponding Author
6. K. M. Lo and **I. L. Chien**, "Efficient separation method for tert-butanol dehydration via extractive distillation", *Journal of the Taiwan Institute of Chemical Engineers*, 73, 27-36, 2017(Apr), (SCI,EI), Corresponding Author
7. B. Y. Yu and **I. L. Chien**, "Design and optimization of dimethyl oxalate (DMO) hydrogenation process to produce ethylene glycol (EG)", *Chemical Engineering Research & Design*, 121, 173-190, 2017(May), (SCI,EI), Corresponding Author
8. H. H. Chen, M. K. Chen, B. C. Chen and **I. L. Chien**, "Critical Assessment of Using an Ionic Liquid as Entrainer via Extractive Distillation", *Industrial & Engineering Chemistry Research*, 56(27), 7768-7782, 2017(Jul), (SCI,EI), Corresponding Author
9. B. Y. Yu, R. Huang, X. Y. Zhong, M. J. Lee and **I. L. Chien**, "Energy-Efficient Extraction Distillation Process for Separating Diluted Acetonitrile Water Mixture: Rigorous Design with Experimental Verification from Ternary Liquid Liquid Equilibrium Data",

- Industrial & Engineering Chemistry Research, 56(51), 15112-15121, 2017(Dec), (SCI,EI), Corresponding Author
10. B. Y. Yu, M. K. Chen and **I. L. Chien**, "Assessment on CO<sub>2</sub> Utilization through Rigorous Simulation: Converting CO<sub>2</sub> to Dimethyl Carbonate", Industrial & Engineering Chemistry Research, 57(2), 639-652, 2018(Jan), (SCI,EI), Corresponding Author
  11. C. C. Yi, W. C. Huang and **I. L. Chien**, "Energy-efficient heterogeneous extractive distillation system for the separation of close-boiling cyclohexane/cyclohexene mixture", Journal of the Taiwan Institute of Chemical Engineers, 87, 26-35, 2018(Jun), (SCI,EI), Corresponding Author
  12. A. Yang, R. X. Wei, S. R. Sun, S. A. Wei, W. F. Shen and **I. L. Chien**, "Energy-Saving Optimal Design and Effective Control of Heat Integration-Extractive Dividing Wall Column for Separating Heterogeneous Mixture Methanol/Toluene/Water with Multiazeotropes", Industrial & Engineering Chemistry Research, 57(23), 8036-8056, 2018(Jun), (SCI,EI)
  13. Y. Yang, J. Liu, W. F. Shen, J. Li and **I. L. Chien**, "High-efficiency utilization of CO<sub>2</sub> in the methanol production by a novel parallel-series system combining steam and dry methane reforming", Energy, 158, 820-829, 2018(Sep), (SCI,EI)
  14. C. C. Yi, W. F. Shen and **I. L. Chien**, "Design and control of an energy-efficient alternative process for the separation of methanol/toluene/water ternary azeotropic mixture", Separation and Purification Technology, 207, 489-497, 2018(Dec), (SCI,EI), Corresponding Author
  15. Y. H. Wang and **I. L. Chien**, "Unique Design Considerations for Maximum-Boiling Azeotropic Systems via Extractive Distillation: Acetone/Chloroform Separation", Industrial & Engineering Chemistry Research, 57(38), 12884-12894, 2018(Sep), (SCI,EI), Corresponding Author
  16. B. Y. Yu, C. Y. Chung and **I. L. Chien**, "Development of a plant-wide Dimethyl Oxalate (DMO) synthesis process from syngas: Rigorous design and optimization", Computers & Chemical Engineering, 119, 85-100, 2018(Nov), (SCI,EI), Corresponding Author
  17. Y. J. Hu, Y. Su, S. M. Jin, **I. L. Chien** and W. F. Shen, "Systematic approach for screening organic and ionic liquid solvents in homogeneous extractive distillation exemplified by the tert-butanol dehydration", Separation and Purification Technology, 211, 723-737, 2019(Mar), (SCI,EI)
  18. C. C. Yi and **I. L. Chien**, "Control Study to Enhance the Controllability of Heterogeneous Extractive Distillation: Cyclohexane/Cyclohexene Separation", Industrial & Engineering Chemistry Research, 58(8), 3211-3224, 2019(Feb), (SCI,EI), Corresponding Author
  19. S. B. Yang and **I. L. Chien**, "Rigorous Design and Optimization of Methyl Glycolate Production Process through Reactive Distillation Combined with a Middle Dividing-Wall Column", Industrial & Engineering Chemistry Research, 58(13), 5215-5227, 2019(Apr), (SCI,EI), Corresponding Author
  20. A. Yang, H. C. Zou, **I. L. Chien**, D. Wang, S. A. Wei, J. Z. Ren and W. F. Shen, "Optimal Design and Effective Control of Triple-Column Extractive Distillation for Separating Ethyl Acetate/Ethanol/Water with Multiazeotrope", Industrial & Engineering Chemistry Research, 58(17), 7265-7283, 2019(May), (SCI,EI)

21. A. Yang, Y. Su, W. F. Shen, **I. L. Chien** and J. Z. Ren, "Multi-objective optimization of organic Rankine cycle system for the waste heat recovery in the heat pump assisted reactive dividing wall column", *Energy Conversion and Management*, 199, 112041, 2019(Nov), (SCI,EI)
22. A. Yang, Y. Su, **I. L. Chien**, S. M. Jin, C. L. Yan, S. A. Wei and W. F. Shen, "Investigation of an energy-saving double-thermally coupled extractive distillation for separating ternary system benzene/toluene/cyclohexane", *Energy*, 186, 115756, 2019(Nov), (SCI,EI)
23. A. Yang, S. M. Jin, W. F. Shen, P. Z. Cui, **I. L. Chien** and J. Z. Ren, "Investigation of energy-saving azeotropic dividing wall column to achieve cleaner production via heat exchanger network and heat pump technique", *Journal of Cleaner Production*, 234, 410-422, 2019(Oct), (SCI,EI)
24. C. L. Yan, A. Yang, **I. L. Chien**, S. A. Wei, W. F. Shen and J. Z. Ren, "Advanced exergy analysis of organic Rankine Cycles for Fischer-Tropsch syngas production with parallel dry and steam methane reforming", *Energy Conversion and Management*, 199, 111963, 2019(Nov), (SCI,EI)
25. S. R. Sun, A. Yang, **I. L. Chien**, W. F. Shen, S. A. Wei, J. Z. Ren and X. P. Zhang, "Intensification and performance assessment for synthesis of 2-methoxy-2-methylheptane through the combined use of different pressure thermally coupled reactive distillation and heat integration technique", *Chemical Engineering and Processing-Process Intensification*, 142, 107561, 2019(Aug), (SCI,EI)
26. W. C. Shen and **I. L. Chien**, "Design and Control of Ethanol/Benzene Separation by Energy Saving Extraction Distillation Process Using Glycerol as an Effective Heavy Solvent", *Industrial & Engineering Chemistry Research*, 58(31), 14295-14311, 2019(Aug), (SCI,EI), Corresponding Author
27. T. W. Wu and **I. L. Chien**, "CO<sub>2</sub> Utilization Feasibility Study: Dimethyl Carbonate Direct Synthesis Process with Dehydration Reactive Distillation", *Industrial & Engineering Chemistry Research*, 59(3), 1234-1248, 2020(Jan), (SCI,EI), Corresponding Author
28. Y. H. Wang, S. H. Khudaida, J. Y. Ong, M. J. Lee, and **I. L. Chien**, "Improved Design of Maximum-Boiling Phenol/Cyclohexanone Separation with Experimentally Verified Vapor-Liquid Equilibrium Behaviors", *Industrial & Engineering Chemistry Research*, 59(13), 6007-6020, 2020(Apr), (SCI,EI), Corresponding Author
29. K. Y. Lin, M. L. Tsai, and **I. L. Chien**, "Energy-Efficient Separation Design of Diisopropylether/Isopropanol/Water System Having Three Distillation Regions and Liquid-Liquid Envelope", *Separation and Purification Technology*, 251, 117292, 2020(May), (SCI,EI), Corresponding Author
30. M. L. Tsai, Y. H. Wang, and **I. L. Chien**, "Novel Control Strategy for Maximum-Boiling Extractive Distillation Systems: Acetone/Chloroform Separation", *Industrial & Engineering Chemistry Research*, 59(18), 8740-8756, 2020(May), (SCI,EI), Corresponding Author
31. K. Y. Lin, M. L. Tsai, and **I. L. Chien**, "Energy-Efficient Separation Design of Diisopropylether/Isopropanol/Water System Having Three Distillation Regions and Liquid-Liquid Envelope", *Separation and Purification Technology*, 251, 117292, 2020(Nov), (SCI,EI), Corresponding Author

## Conference Papers

1. Sony Ardian Affandy, Renanto Handogo, Juwari Purwo Sutikno and **I-Lung Chien**, "Design of Natural Gas Dehydration Unit Using TEG (Triethylene Glycol)", The 7<sup>th</sup> International Symposium on Design Operation and Control of Chemical Processes (PSE ASIA 2016), Tokyo Japan, 2016(Jul)
2. Wen-Chi Huang and **I-Lung Chien**, "Design and Economic Evaluation of a Ethyl Benzene/Styrene Separation Process", The 7<sup>th</sup> International Symposium on Design Operation and Control of Chemical Processes (PSE ASIA 2016), Tokyo Japan, 2016(Jul)
3. Hung-Hsing Chen and **I-Lung Chien**, "Application of Ionic Liquids as Entrainer and Extraction Solvent", The 7<sup>th</sup> International Symposium on Design Operation and Control of Chemical Processes (PSE ASIA 2016), Tokyo Japan, 2016(Jul)
4. Ka-Man Lo and **I-Lung Chien**, "Conceptual Process Design of an Extractive Distillation Process to Dehydrate tert-Butanol using Glycerol as Entrainer", The 7<sup>th</sup> International Symposium on Design Operation and Control of Chemical Processes (PSE ASIA 2016), Tokyo Japan, 2016(Jul)
5. Bor-Yih Yu and **I-Lung Chien**, "Design and Optimization of Methanol-to-Olefin (MTO) Process", The 7<sup>th</sup> International Symposium on Design Operation and Control of Chemical Processes (PSE ASIA 2016), Tokyo Japan, 2016(Jul)
6. Wei-Lun Chang and **I-Lung Chien**, "Potentials of Significant Energy-Saving via Hybrid Extraction-Distillation Separation System: n-Propanol Dehydration", AIChE Annual Meeting, San Francisco CA U. S. A., 2016(Nov)
7. Bor-Yih Yu and **I-Lung Chien**, "Design and Economical Evaluation of Polygen Process to Co-Produce Synthetic Natural Gas (SNG), Methanol and Ethylene Glycol", AIChE Annual Meeting, San Francisco CA U. S. A., 2016(Nov)
8. Hung-Hsing Chen, Meng-Kai Chen and **I-Lung Chien**, "Using [EMIM][OAC] as Entrainer for Isopropyl Alcohol Dehydration via Extractive Distillation", 6<sup>th</sup> International Symposium on Advanced Control of Industrial Processes, Taipei Taiwan, 2017(May)
9. Chun-Cheng Yi, Wen-Chi Huang and **I-Lung Chien**, "Energy-Saving Heterogeneous Extractive Distillation System for the Separation of Close-boiling Cyclohexane/Cyclohexene Mixture", AIChE Annual Meeting, Minneapolis MN U. S. A., 2017(Oct)
10. Yen-Hsiang Wang, Ka-Man Lo and **I-Lung Chien**, "Unique Design Considerations for Maximum-Boiling Azeotrope via Extractive Distillation System: Acetic Acid/N,N-Dimethylacetamide Separation", AIChE Annual Meeting, Minneapolis MN U. S. A., 2017(Oct)
11. Yen-Hsiang Wang and **I-Lung Chien**, "Extractive Distillation System for Separating Maximum-Boiling Azeotrope: Acetic Acid/N,N-dimethyl Acetamide Separation", 2018 Symposium on Thermodynamics and Process Systems Engineering, Tainan Taiwan, 2018(May)
12. Chun-Cheng Yi, Wen-Chi Huang and **I-Lung Chien**, "Effective Separation Method for Close-Boiling Cyclohexane/Cyclohexene Mixture via Heterogeneous Extractive Distillation", 2018 Symposium on Thermodynamics and Process Systems Engineering, Tainan Taiwan, 2018(May)

13. Meng-Kai Chen and **I-Lung Chien**, "Potentials for CO<sub>2</sub> Utilization: Diethyl Carbonate Synthesis from Propylene Oxide", PSE-2018, San Diego CA U.S. A., 2018(Jul)
14. Zi-Jie Ai, Chuan-Yi Chung and **I-Lung Chien**, "Design and Control of Poly(oxymethylene) Dimethyl Ethers Production Process Directly from Formaldehyde and methanol in Aqueous Solutions", 10<sup>th</sup> IFAC Symposium on Advanced Control of Chemical Processes, Shenyang China, 2018(Jul)
15. Yin-Chi Wang and **I-Lung Chien**, "Design of Reactive Dividing-Wall Column for the Synthesis of Diethyl Carbonate", 6<sup>th</sup> International Symposium on Process Intensification, Taipei Taiwan, 2018(Nov)
16. Yen-Hsiang Wang and **I-Lung Chien**, "Necessity of Curvature in Distillation Boundary for Feasible Extractive Distillation Systems in Separating Maximum-Boiling Azeotropes", AIChE Spring Meeting, New Orleans LA U. S. A., 2019(Mar)
17. Meng-Lin Tsai, Tsai-Wei Wu, Wei-Cheng Shen, Shiau-Jeng Shen, Yin-Chi Wang, Zong-Yan Li, Jia Yi Ong and **I-Lung Chien**, "Design and control of the hybrid extraction-distillation process for acetonitrile dehydration", 66<sup>th</sup> Annual Meeting of the Taiwan Institute of Chemical Engineers, Taichung Taiwan, 2019(Nov)
18. Tsai-Wei Wu and **I-Lung Chien**, "CO<sub>2</sub> Utilization Feasibility Study: Process Intensification of DMC Direct Synthesis Process", 9<sup>th</sup> Asian Symposium on Process Systems Engineering (PSE Asia 2020), Taipei, Taiwan, 2020(Nov)
19. Meng-Lin Tsai, Kai-Yang Lin, Yin-Rui Zhang, and **I-Lung Chien**, "Energy-Efficient Separation Design Aided by Liquid-Liquid Separation and Pressure Swing for Complicated Ternary System", 9<sup>th</sup> Asian Symposium on Process Systems Engineering (PSE Asia 2020), Taipei, Taiwan, 2020(Nov)

#### Books/Chapters

1. W. L. Luyben and **I-Lung Chien**, *Design and Control of Distillation Systems for Separating Azeotropes*. Wiley, Hoboken, New Jersey, 2010.
2. 呂維明、黃孝平、余政靖、錢義隆，「化工程序設計概論」，高立書局，2011。
3. Hsiao-Ping Huang, **I-Lung Chien**, and Hao-Yeh Lee, "Plantwide Control of a Reactive Distillation Process", in *Plantwide Control: Recent Developments and Applications*. G. P. Rangaiah and V. Kariwala, Eds. Wiley, Hoboken, New Jersey, 2012.
4. 錢義隆、汪上曉，第三章蒸餾，「化工單元操作(三)」，呂維明主編，高立書局，2012。
5. D. C. Y. Foo, N. Chemmangattualappil, D. K. S. Ng, E. Elyas, C. L. Chen, R. D. Elms, H. Y. Lee, **I. L. Chien**, S. Chong, and C. H. Chong, *Chemical Engineering Process Simulation*, Elsevier, Inc., 2017.

#### Honors and Others

1. Associate Editor, Journal of Process Control (2012 - now).

2. Keynote speaker, "Energy-Saving Design of Hybrid Extraction-Distillation System for Azeotropic Separation", 2016 International Symposium on Novel and Sustainable Technology, Tainan, Taiwan, October 6-7, 2016.
3. International Program Committee (IPC) member, 7<sup>th</sup> International Symposium on Design Operation & Control of Chemical Processes (PSE Asia 2016), Tokyo, Japan, July 24-27, 2016.
4. ACS 期刊 "Industrial and Engineering Chemistry Research" Excellence in Review Award, 2016.
5. 2016 Certificate of Outstanding Contributions in Reviewing, Computers and Chemical Engineering; Chemical Engineering & Processing: Process Intensification; and Journal of Process Control.
6. 指導 陳宏興同學·獲得 2016 亞洲區程序系統工程研討會口頭報告「傑出學生論文獎」, 2016.
7. 指導 余柏毅同學·獲得 2016 年「台灣巴斯夫碩 / 博士創新論文獎」, 2016。並為台灣區唯一獲選全額補助至 Ludwigshafen 德國巴斯夫總部舉辦之「2017 年巴斯夫國際夏令營」之活動。
8. Selected as one of the ten the most highly prolific authors for Industrial and Engineering Chemistry Research in 2017.
9. ACS 期刊 "Industrial and Engineering Chemistry Research" Excellence in Review Award, 2017.
10. 2017 Certificate of Outstanding Contributions in Reviewing, Applied Thermal Engineering; Chemical and Engineering Research and Design; and Journal of Taiwan Institute of Chemical Engineers.
11. 指導傅子袁、徐瑋澤、林采葳三位同學獲得 105 年度(2016-2017)台灣化學工程學會大學部學生程序設計競賽第三名, 得獎作品「以甘油產製碳酸甘油酯製程之設計最適化與經濟評估研究」。
12. 指導林耕生、康詠舜、李家安三位同學獲得 105 年度聰賢芬英創新程序設計最佳創意團隊獎(第一名), 得獎作品「以甘油產製乳酸製程之設計最適化與經濟評估研究」。
13. 指導 余柏毅同學·獲得 2017 年「中技社科技研究獎學金」。
14. 指導盧彥安、陳芷儀、洪鈺傑三位同學獲得 106 年度聰賢芬英創新程序設計最佳創意團隊獎(第一名), 得獎作品「年產量 10 萬噸異丙苯工廠」。
15. ACS 期刊 "Industrial and Engineering Chemistry Research" Excellence in Review Award, 2018.

16. 2018 Certificate of Outstanding Contributions in Reviewing, Chemical Engineering Science; Energy Journal; and Separation and Purification Technology.
17. ACS 期刊 "Industrial and Engineering Chemistry Research" Excellence in Review Award, 2019.
18. 指導 蔡孟霖同學·獲得 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壁報論文展暨競賽「綠色化工技術與程序系統工程」優勝獎·2019.
19. 指導汪毓恩、楊竣硯、林孟暉、王逸銘四位同學獲得 109 年度聰賢芬英創新程序設計最佳創意團隊獎(第一名)·得獎作品「以純氧、純氮為產品目標之空氣分離程序」。

