

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
Clean Coal Processes
Modeling and Control of Renewable Energy
and Biomedical Systems

Projects (started from 2013)

1. Design and Control of Various Azeotropic Separation Processes
各類共沸物分離製程之設計與控制, 計畫主持人
Sponsored by National Science Council
NT\$ 2,388,000; 2011/8/1-2014/7/31
2. Design and Control of Hybrid Plant for Coal to Synthetic Natural Gas and also co-produce Chemicals (I)
煤炭氣化產製合成天然氣並與下游化學工廠整合之設計與控制(I), 計畫主持人
Sponsored by National Science Council
NT\$ 3,000,000; 2013/1/1-2013/12/31
3. High Efficiency Separation, Purification, Mixing and Dispersion Technology Research and Development Center
高效率分離純化與混合分散基礎技術研發暨推廣中心計畫, 共同主持人
Sponsored by National Science Council
NT\$ 8,000,000; 2014/1/1-2014/12/31
4. Design and Simulation of Various Biorenewable-based Processes
產學合作計畫-不同生質可再生程序之設計與模擬研究, 共同主持人
Sponsored by National Science Council
NT\$ 2,237,000; 2013/2/1-2014/1/31
5. Process Development and Simulation of Bio-derivatives
產學合作計畫-生質原料衍生物之製程開發與模擬, 共同主持人
Sponsored by National Science Council
NT\$ 2,231,000; 2013/11/1-2014/10/31
6. Automatic Load Change System of No. 5 Air Separation Plant(II): Dynamic Simulation and Control
氧氣工廠 5 號機製程自動變負載技術(II)-動態模擬與控制, 共同主持人
Sponsored by China Steel Company
NT\$ 500,000; 2013/8/1-2014/7/31

Journal Papers

1. Hao-Yeh Lee, Tsung-Hua, Yang, **I-Lung Chien**, and Hsiao-Ping Huang, "Grade Transition Using Dynamic Neural Networks for an Industrial High-Pressure

- Ethylene-Vinyl Acetate (EVA) Copolymerization Process”, *Comput. Chem. Engng.*, 33, 1371-1378 (2009). (SCI, EI)
2. Hao-Yeh Lee, Ling-Ting Yen, **I-Lung Chien**, and Hsiao-Ping Huang, 2009, “Reactive Distillation for Esterification of an Alcohol Mixture Containing *n*-Butanol and *n*-Amyl Alcohol”, *Ind. Eng. Chem. Res.*, 48, 7186-7204 (2009). (SCI, EI)
 3. Yi-Chang Wu, **I-Lung Chien**, and William L. Luyben, “A Two-Stripper/Decanter Flowsheet for Methanol Recovery in the TAME Reactive-Distillation Process”, *Ind. Eng. Chem. Res.*, 48, 10532-10540 (2009). (SCI, EI)
 4. Yi-Chang Wu and **I-Lung Chien**, “Design and Control of Heterogeneous Azeotropic Column System for the Separation of Pyridine and Water”, *Ind. Eng. Chem. Res.*, 48, 10564-10576 (2009). (SCI, EI)
 5. Kai-Yi Hsu, Yuan-Chang Hsiao, and **I-Lung Chien**, “Design and Control of Dimethyl Carbonate-Methanol Separation via Extractive Distillation in the Dimethyl Carbonate Reactive-Distillation Process”, *Ind. Eng. Chem. Res.*, 49, 735-749 (2010). (SCI, EI)
 6. Jordan Ko, Wen-Jun Su, **I-Lung Chien**, Der-Ming Chang, Sheng-Xin Chou, and Rui-Yu Zhan, “Dynamic Modeling and Analyses of Simultaneous Saccharification and Fermentation Process to Produce Bio-ethanol from Rice Straw”, *Bioprocess and Biosystems Engineering*, 33, 195-205 (2010). (SCI, EI)
 7. Chia-Hsing Lai, Ching-Lun Lin, Der-Ming Chang, and **I-Lung Chien**, “Method for Obtaining an Empirical Microbial Growth Model via Chemostat Operation”, *J. Taiwan Inst. Chem. Eng.*, 41, 421-433 (2010). (SCI, EI).
 8. Hao-Yeh Lee, Cheng-Hsun Jan, **I-Lung Chien**, and Hsiao-Ping Huang, “Feed-Splitting Operating Strategy of a Reactive Distillation Column for Energy-Saving Production of Butyl Propionate”, *J. Taiwan Inst. Chem. Eng.*, 41, 403-413 (2010). (SCI, EI)
 9. Hao-Yeh Lee, Yi-Chen Lee, **I-Lung Chien**, and Hsiao-Ping Huang, “Design and Control of a Heat-Integrated Reactive Distillation System for the Hydrolysis of Methyl Acetate”, *Ind. Eng. Chem. Res.*, 49, 7398-7411 (2010). (SCI, EI)
 10. Yi-Chang Wu, C. S. Hsu, Hsiao-Ping Huang, and **I-Lung Chien**, “Design and Control of a Methyl Methacrylate Separation Process with a Middle Decanter”, *Ind. Eng. Chem. Res.*, 50, 4595-4617 (2011). (SCI, EI)
 11. Hon-Yu Wei, Anisatur Rokhmah, Renanto Handogo, and **I-Lung Chien**, “Design and Control of a Reactive-Distillation Process for the Production of Diethyl Carbonate via Two Consecutive Trans-esterification Reactions”, *J. Process Control*, 21, 1193-1207 (2011). (SCI, EI)
 12. Jian Kai Cheng, Cheng-Lin Lee, Yong-Tang Jhuang, Jeffrey D. Ward, and **I-Lung Chien**, “Design and Control of the Glycerol Tertiary Butyl Ethers Process for the Utilization of a Renewable Resource”, *Ind. Eng. Chem. Res.*, 50, 12706-12716 (2011). (SCI, EI)
 13. Shih-Wei Liu, Hsiao-Ping Huang, Chia-Hung Lin, and **I-Lung Chien**, “A Hybrid Neural Network Model Predictive Control with Zone Penalty Weights for Type 1 Diabetes Mellitus”, *Ind. Eng. Chem. Res.*, 51, 9041-9060 (2012). (SCI, EI)
 14. Der-Ming Chang, Tzu-Hsing Wang, **I-Lung Chien**, and Wen-Song Hwang, “Improved Operating Policy Utilizing Aerobic Operation for Fermentation Process to Product

- Bio-ethanol”, *Biochemical Engineering Journal*, 69, 178-189 (2012). (SCI, EI)
15. Hao-Yeh Lee, I-Kuan Lai, Hsiao-Ping Huang, and **I-Lung Chien**, “Design and Control of Thermally Coupled Reactive Distillation for the Production of Isopropyl Acetate”, *Ind. Eng. Chem. Res.*, 51, 11753-11763 (2012). (SCI, EI)
 16. Shih-Wei Liu, Hsiao-Ping Huang, Chia-Hung Lin, and **I-Lung Chien**, “Fuzzy-Logic-Based Supervisor of Insulin Bolus Delivery for Patients with Type 1 Diabetes Mellitus”, *Ind. Eng. Chem. Res.*, 52, 1678-1690 (2013). (SCI, EI)
 17. Yi-Chang Wu, Hao-Yeh Lee, Chen-Yu Tsai, Hsiao-Ping Huang, and **I-Lung Chien**, “Design and Control of a Reactive-distillation Process for Esterification of an Alcohol Mixture Containing Ethanol and n-butanol”, *Comput. Chem. Eng.*, 57, 63-77 (2013). (SCI, EI)
 18. Yi-Chang Wu, Paul Hen-Chia Hsu, and **I-Lung Chien**, “Critical Assessment of Energy-Saving Potential of Extractive Dividing-wall Column”, *Ind. Eng. Chem. Res.*, 52, 5384-5399 (2013). (SCI, EI)
 19. Chien-Yuan Su, Cheng-Ching Yu, **I-Lung Chien** and Jeffrey D. Ward, “Plant-wide Economic Comparison of Lactic Acid Recovery Processes by Reactive Distillation with Different Alcohols”, *Ind. Eng. Chem. Res.*, 52, 11070-11083 (2013). (SCI, EI)
 20. Yi-Chang Wu, Hao-Yeh Lee, Chung-Han Lee, Hsiao-Ping Huang, and **I-Lung Chien**, “Design and Control of Thermally-Coupled Reactive Distillation System for Esterification of an Alcohol Mixture Containing n-Amyl Alcohol and n-Hexanol”, *Ind. Eng. Chem. Res.*, 52, 17184-17197 (2013). (SCI, EI)
 21. Jian-Kai Cheng, Chuan-Chen Chao, Jeffrey D. Ward, and **I-Lung Chien**, “Design and control of a biodiesel production process using sugar catalyst for oil feedstock with different free fatty acid concentrations”, *J. Taiwan Inst. Chem. Engrs.*, in press (2013).

Conference Papers

1. Yi-Chang Wu, William L. Luyben, and **I-Lung Chien**, “A Two-Stripper/Decanter Flowsheet for Methanol Recovery in the TAME Reactive-Distillation Process”, AIChE Annual Meeting, November 8-13, Nashville, TN, U. S. A. (2009).
2. Hsiao-Ping Huang, Shih-Wei Liu, **I-Lung Chien**, and Chia-Hung Lin, “A Dynamic Model with Structured Recurrent Neural Network to Predict Glucose-Insulin Regulation of Type-1 Diabetes Mellitus”, 9th International Symposium on Dynamics and Control of Process Systems, July 5-7, Leuven, Belgium (2010).
3. Hon-Yu Wei, Anisatur Rokhmah, Renanto Handogo, and **I-Lung Chien**, “Design and Control of Diethyl Carbonate Transesterification Process”, The 13th Asia Pacific Confederation of Chemical Engineering Congress (APCChE), October 5-8, Taipei, Taiwan (2010). (Scientific Committee and Area Chair)
4. Hao-Yeh Lee, Chia-Hung Kuo, **I-Lung Chien**, and Hsiao-Ping Huang, “Evolutional Batch Reactive Distillation Operation Strategy for Esterification of Butyl Acetate Process”, The 13th Asia Pacific Confederation of Chemical Engineering Congress (APCChE), October 5-8, Taipei, Taiwan (2010). (Scientific Program Committee and Area Chair)

5. Hon-Yu Wei, Anisatur Rokhmah, Renanto Handogo, and **I-Lung Chien**, “Design and Control of Reactive-Distillation Process for the Production of Diethyl Carbonate”, The 5th International Symposium on Design, Operations and Control of Chemical Processes, July 25-28, Singapore (2010). (Program Committee)
6. J. K. Cheng, Y. T. Jhuang, J. D. Ward, and **I-Lung Chien**, “Design and Control of a New Glycerol Tertiary Butyl Ethers Process for the Utilization of Renewable Resource”, AIChE Annual Meeting, November 7-12, Salt Lake City, UT, U. S. A. (2010).
7. Yi-Chang Wu, C. S. Hsu and **I-Lung Chien**, “Design and Control of a Methyl Methacrylate Separation Process with a Middle Decanter”, AIChE Annual Meeting, November 7-12, Salt Lake City, UT, U. S. A. (2010).
8. J. K. Cheng, Y. H. Shen, Y. T. Jhuang, C. C. Chao, J. D. Ward, **I-Lung Chien**, and C. C. Yu, “Plantwide Design and Control of Biodiesel Production Process via Two-Step Syntheses or by Simultaneous Esterification/Transesterification”, AIChE Annual Meeting, November 7-12, Salt Lake City, UT, U. S. A. (2010).
9. Hao-Yeh Lee, Yuan-Lin Lin, Hsiao-Ping Huang, Cheng-Liang Chen, and **I-Lung Chien**, “Design and Control of Cyclohexanol Reactive-Distillation Process with Alternative Decanter Configurations”, 4th International Symposium on Advanced Control of Industrial Processes, May 23-26, Hangzhou, PRC (2011).
10. Yi-Chang Wu, and **I-Lung Chien**, “Design of Distillation Systems for Separating Azeotrope: Heterogeneous Azeotropic Distillation vs. Extractive Distillation”, AIChE Annual Meeting, October 16-21, Minneapolis, MN, U. S. A. (2011).
11. Yi-Chang Wu, Hao-Yeh Lee, Chen-Yu Tsai, Hsiao-Ping Huang, and **I-Lung Chien**, “Design and Control of a Reactive-Distillation Process for Esterification of an Alcohol Mixture Containing Ethanol and n-Butanol”, 11th International Symposium on Process Systems Engineering, July 15-19, Singapore (2012).
12. Yi-Chang Wu, Hao-Yeh Lee, Chung-Han Lee, Hsiao-Ping Huang, and **I-Lung Chien**, “Design and Control of a Reactive Divided Wall Column for Esterification with Mixed n-Amyl Alcohol and n-Hexanol Feed”, 11th International Symposium on Process Systems Engineering, July 15-19, Singapore (2012).
13. **I-Lung Chien**, “Opportunities for Energy Savings in Azeotropic Separation Processes”, 11th International Symposium on Process Systems Engineering, July 15-19, Singapore (2012). (Keynote Speaker).
14. Tzu-Hsuan Peng, Cheng-Liang Chen, and **I-Lung Chien**, “Design of Reactive Distillation Process for the Production of n-Butyl Levulinate”, AIChE Annual Meeting, October 28- November 2, Pittsburgh, PA, U. S. A. (2012).
15. Paul Hen-Chia Hsu, Yi-Chang Wu, and **I-Lung Chien**, “Critical Assessment of Energy-Saving Potential of Extractive Dividing Wall Column”, AIChE Annual Meeting, October 28- November 2, Pittsburgh, PA, U. S. A. (2012).
16. **錢義隆**, “共沸物分離程序之節能設計”, 2012 台灣化學工程學會 59 週年年會綠色化工技術及程序系統工程分組, 十一月二十三至二十四日, 台中 (2012). (Invited Speaker).
17. Cheng-Liang Chen, Tzu-Hsuan Peng, **I-Lung Chien** and Y. H. Chung, “Design and

Control of Reactive-Distillation Process for Producing n-Butyl Levulinate”, 6th International Conference on Process Systems Engineering (PSE ASIA 2013), June 25-27, Kuala Lumpur, Malaysia (2013).

18. B. J. Chen, Y. L. Lin, H. P. Huang, and **I. L. Chien**, “Reactive-Distillation Process for Direct Hydration of Cyclohexene to Cyclohexanol”, 6th International Conference on Process Systems Engineering (PSE ASIA 2013), June 25-27, Kuala Lumpur, Malaysia (2013).
19. Bor-Yi Yu, Ming-Lung Li, Po-Hsian Lee, Yu-Lung Kao, Chung-Han Wu, Shih-En Hsu, Jeffrey D. Ward, Hao-Yeh Lee, Yih-Hang Chen Sr. and **I-Lung Chien**, “Design and Control of Coal to Synthesis Natural Gas Process”, AIChE Annual Meeting, November 3-8, San Francisco, CA, U. S. A. (2013).
20. Yi-Chang Wu, Hao-Yeh Lee and **I-Lung Chien**, “Energy-Saving Design of a Dividing-Wall Heterogeneous Azeotropic Column for the Separation of Pyridine and Water”, AIChE Annual Meeting, November 3-8, San Francisco, CA, U. S. A. (2013).

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.

Technology Transfer

1. 技術服務：二氧陸圖回收系統之程序最佳化設計；國喬石化；NT\$ 450,000; 2009/06/01-2009/12/31
2. 技術服務(共同主持人)：乙酸正丁酯系統程序模擬及最適化；勝一化工；NT\$ 600,000; 2010/03/01-2010/09/30
3. 先期技術移轉授權(共同主持人)：以 Aspen 軟體建構酯化反應蒸餾之設計及節能技術平台；新鼎系統; NT\$ 300,000; 2010/11/01-2011/10/31
4. 技術服務(共同主持人)：醋酸脫水系統程序模擬與評估；新鼎系統；NT\$ 388,000; 2011/04/01-2011/11/30

Honors and Others

1. Associate Editor, Journal of Process Control, 2012-2014.

2. Keynote Speaker, 11th International Symposium on Process Systems Engineering (PSE 2012), Singapore, July 15-19, 2012.
3. Invited speaker in Green Technology and Process Systems Engineering Sessions, 59th Annual Meeting of the Taiwan Institute of Chemical Engineers, Taichung, Taiwan, November 23-24, 2012.
4. Invited speaker, Special honor session for Professor W. L. Luyben, AIChE Annual Meeting, Minneapolis, MN, October 16-21, 2011.
5. Scientific Committee member, Distillation & Absorption International Conference, Eindhoven, The Netherlands, September 12-15, 2010.
6. International Program Committee (IPC) member, The 5th International Symposium on Design, Operations and Control of Chemical Processes, Singapore, July 25-28, 2010.
7. Scientific Program Committee member and Area Chair of Green Products and Process Systems, The 13th Asia Pacific Confederation of Chemical Engineering Congress (APCCHE), Taipei, Taiwan, October 5-8, 2010.
8. International Program Committee (IPC) member, The 11th International Symposium on Process Systems Engineering, Singapore, July 15-19, 2012.
9. International Program Committee (IPC) member, 6th International Conference on Process Systems Engineering (PSE Asia 2013), Kuala Lumpur, Malaysia, June 25-27, 2013.
10. Program Co-Chair in Area 14: Process Intensification, AIChE Annual Meeting, San Francisco, CA, U. S. A., November 3-8, 2013.
11. International Program Committee (IPC) member, PSE-2015/ESCAPE25, Copenhagen, Denmark, May 31 – June 4, 2015.
12. 化工會刊 2012 年 6 月號「綠色程序系統工程」專輯主編。
13. 化工技術 2012 年 4 月號「蒸餾技術」專輯主編。
14. 指導許凱茜、黃志銘、賴時正三位同學獲得台灣化學工程學會 100 年度(2010-2011)大學部學生程序設計競賽第一名(李國鼎獎)，得獎作品「乙二醇用於萃取蒸餾之製程設計」。
15. 指導施則孝、李明龍、方鵬傑三位同學獲得 101 年度(2011-2012)台灣化學工程學會大學部學生程序設計競賽第一名(李國鼎獎)，得獎作品「過醋酸製程設計」。
16. 指導陳致安、張智凱、林家名三位同學獲得 102 年度(2012-2013)台灣化學工程學會大學部學生程序設計競賽第二名，得獎作品「異丙醇工廠純化區之程序設計」。
17. 台灣化學工程學會教育委員會委員, 2011/09/26 – 2012/12/31.
18. 台灣化學工程學會會刊及叢書委員會編輯委員, 2011/05/01 – 2014/04/30.