

**Ying-Chih Liao** (廖英志)

Professor

B.S. in Chemical Engineering  
National Taiwan University, 1995  
M.S. in Chemical Engineering  
National Taiwan University, 1997  
Ph.D. in Chemical Engineering  
Purdue University, 2004

**Research and Professional Interests**

Printed electronics  
Thin film coating  
Colloid suspension  
Particle surface functionalization  
Computational fluid dynamics

**Journal Papers**

1. Shiuan-Ying Peng, Tzu-Sen Su, Cheng-An Chen, Kai-Wen Chuang, Tzu-Chien Wei, **Ying-Chih Liao\***, “Recrystallized Perovskite Thin Film via Intense Pulse Light Sintering for Vertical Gradient Band Gap Perovskite Solar Cells”, *ACS Appl. Energy Mater.*, 4, 12, 14240–14248, 2021(Dec). <https://doi.org/10.1021/acsaem.1c02989>
2. Yi-Chin Lai, Yu-Chi Wang, Yu-Chieh Chiu, **Ying-Chih Liao\***, “Microwave-Assisted Synthesis for Silver Nanoplates with a High Aspect Ratio”, *Langmuir*, 37, 46, 13689-13695, 2021(Nov). <https://doi.org/10.1021/acs.langmuir.1c02331>
3. Hsuan-Chin Lu, **Ying-Chih Liao\***, “Direct Printed Silver Nanowire Strain Sensor for Early Extravasation Detection”, *Nanomaterials*, 11, 10, 2583, 2021(Sep). <https://doi.org/10.3390/nano11102583>
4. Yen-Chi Chen, Siang-Sin Shan, **Ying-Chih Liao\***, “Bio-inspired fractal textile device for rapid sweat collection and monitoring”, *Lab Chip*, 2021(May). <https://doi.org/10.1039/D1LC00328C>
5. Jia-Xiu Wu, **Ying-Chih Liao\***, “Self-regulated thermal comfort control for wearable heating device”, *J Taiwan Inst Chem Eng.*, 121, 74-80, 2021(Apr). <https://doi.org/10.1016/j.jtice.2021.04.001>
6. I-Feng Wu, **Ying-Chih Liao\***, “A chemical milling process to produce water-based inkjet printing ink from waste tire carbon blacks”, *Waste Manage.*, 122, 64-70, 2021(Mar). <https://doi.org/10.1016/j.wasman.2020.12.041>
7. Kai-Wen Chuang, Yi-Chen Liu, Ramachandran Balaji, Yu-Chieh Chiu, Jiashing Yu, **Ying-Chih Liao\***, “Enhancing Stability of High-Concentration  $\beta$ -Tricalcium Phosphate Suspension for Biomedical Application”, *Materials*, 16(1), 228, 2022(Dec). <https://doi.org/10.3390/ma16010228>
8. Der-Yun Cheng, I-Hsiang Liao, Jiashing Yu, **Ying-Chih Liao\***, “Highly compressible hydrogel reinforced with cellulose nanocrystals for ultrasound scanning via microwave-assisted synthesis”, *Cellulose*, 29, 18, 9791-9802, 2022(Dec). <https://doi.org/10.1007/s10570-022-04854-6>
9. Ramachandran Balaji, Vengudusamy Renganathan, Chia-Pei Chu, **Ying-Chih Liao\***, CR Kao, Shen-Ming Chen, “Periodic copper microbead array on silver layer for dual mode detection of glyphosate”, *Opennano*, 8, 100105, 2022(Nov-Dec). <https://doi.org/10.1016/j.onano.2022.100105>

10. Shiuan-Ying Peng, Kai-Wen Chuang, Jr-Hau He, **Ying-Chih Liao\***, “Direct Growth and Patterning of Single-Crystal Perovskites via Antisolvent Inkjet Printing”, *ACS Appl. Electron. Mater.*, 4, 11, 5468–5474, 2022(Nov). <https://doi.org/10.1021/acsaelm.2c01112>
11. Hsuan-Chin Lu, Jhu-Lin You, **Ying-Chih Liao\***, “Total Liquid Transfer with Enhanced Contact Line Slippage”, *Langmuir*, 38, 46, 14238-14248, 2022(Nov). <https://doi.org/10.1021/acs.langmuir.2c02238>
12. Balaji Ramachandran, **Ying-Chih Liao\***, “Microfluidic wearable electrochemical sweat sensors for health monitoring”, *Biomicrofluidics*, 16, 051501, 2022(Sep). <https://doi.org/10.1063/5.0116648>
13. Yu-Chieh Chiu, **Ying-Chih Liao\***, “Nanocomposite Coatings to Induce Pigment Precipitation for Durable Paper-Based Foldable Electronics”, *ACS Appl. Electron. Mater.*, 4, 8, 3938–3946, 2022(Jul). <https://doi.org/10.1021/acsaelm.2c00601>
14. Ho-Shu Huang, **Ying-Chih Liao\***, “Thermal and dielectric properties enhancement of photocurable acrylate polymers for digital light processing 3D printed electronics”, *J Appl Polym Sci.*, e52070, 2022(May). <https://doi.org/10.1002/app.52070>
15. Shang-Cheng Tsai, Ling-Hsuan Chen, Chia-Pei Chu, Wei-Cheng Chao, **Ying-Chih Liao\***, “Photo Curable Resin for 3D Printed Conductive Structures”, *Addit Manuf.*, 51, 102590, 2022(Mar). <https://doi.org/10.1016/j.addma.2021.102590>
16. Ting-Yu Cheng, **Ying-Chih Liao\***, “Rapid hardening process for starch-based powder bed 3D printing”, *J Manuf Process.*, 75, 259-267, 2022(Mar). <https://doi.org/10.1016/j.jmapro.2021.12.053>
17. Ting-Yu Cheng, **Ying-Chih Liao\***, “Enhancing drop mixing in powder bed by alternative particle arrangements with contradictory hydrophilicity”, *Journal of the Taiwan Institute of Chemical Engineers*, 131, 104160, 2022(Feb). <https://doi.org/10.1016/j.jtice.2021.104160>
18. Hao-Yi Kuo, Nobuyuki Takabayashi, Shao-Yung Lu, Tomohiko Mitani, Ying-Chih Liao, Yu-Te Liao, “Wirelessly Powered Temperature Sensing System Using Unmanned Aerial Vehicle for Environmental Monitoring”, *IFEEC*, 1-4, 2022(Jan). DOI: 10.1109/IFEEC53238.2021.9661764
19. Praewpakun Sintharm, Adun Nimpaiboon, Ying-Chih Liao, Muenduen Phisalaphong, “Bacterial cellulose reinforced with skim/fresh natural rubber latex for improved mechanical, chemical and dielectric properties”, *Cellulose*, 29, 1739–1758, 2022(Jan). <https://doi.org/10.1007/s10570-021-04366-9>
20. Yu-Tzu Liao, Shiuan-Ying Peng, Kai-Wen Chuang, **Ying-Chih Liao\***, Yasuhiro Kuramitsu, Wei-Yen Woon, “Exploring the mechanical properties of nanometer-thick elastic films through micro-drop impinging on large-area suspended graphene”, *Nanoscale*, 14, 42-48, 2022(Jan). <https://doi.org/10.1039/D1NR05918A>
21. Wei-Cheng Chao, **Ying-Chih Liao\***, “Cost-effective recycled resin for digital light processing 3D printing”, *J. Clean. Prod.*, 388, 136013, 2023(Feb). <https://doi.org/10.1016/j.jclepro.2023.136013>
22. Christopher R Anthony, Hansol Wee, Vishrut Garg, Sumeet S Thete, Pritish M Kamat, Brayden W Wagoner, Edward D Wilkes, Patrick K Notz, Alvin U Chen, Ronald Suryo,

- Krishnaraj Sambath, Jayanta C Panditaratne, Ying-Chih Liao, Osman A Basaran, "Sharp Interface Methods for Simulation and Analysis of Free Surface Flows with Singularities: Breakup and Coalescence", *Annu Rev Fluid Mech.*, 55, 707-747, 2023(Jan). <https://doi.org/10.1146/annurev-fluid-120720-014714>
23. Jia-Sheng Tang, Cheng-Ying Lee, **Ying-Chih Liao\***, "Chemical resistant silver nanowire/cellulose nanofibril flexible transparent conductive coatings", *Prog. Org. Coat.*, 174, 107284, 2023(Jan). <https://doi.org/10.1016/j.porgcoat.2022.107284>
24. Jia-Xiu Wu, Chia-Pei Chu, **Ying-Chih Liao\***, "Solderable conductive paste for electronic textiles", *J Taiwan Inst Chem Eng.*, 142, 104616, 2023(Jan). <https://doi.org/10.1016/j.jtice.2022.104616>

### Conference Papers

1. Ramachandran Balaji\*, Ding-Hong Weng, V. Renganathan, C. R. Kao, **Ying-Chih Liao**, Biomass Hydrochar Integrated Electrodes for Electrochemical Sensing of Glucose and Lactose in Sweat, 台灣化學工程學會 69 屆年會 · December 2-3, 2022, 新北 · 台灣.
2. Cheng-Ying Lee\*, Ching-Tai Kuo, Jia-Sheng Tang, **Ying-Chih Liao**, Fabrication and Application of TEMPO-oxidized Cellulose Nanofiber/Waterborne Polyurethane Composite Packaging Film, 台灣化學工程學會 69 屆年會, December 2-3, 2022, 新北, 台灣.
3. Yi-Chen Weng\*, Ling-Hsuan Chen, **Ying-Chih Liao**, CNT Suspension via Supercritical Carbon Dioxide in Thermally Conductive Photocurable Resin, 台灣化學工程學會 69 屆年會, December 2-3, 2022, 新北, 台灣.
4. Ding-Hong Weng\*, Yen-Chi Chen, **Ying-Chih Liao**, Functional Textile with Self-draining Droplet Transport for Sweat Collection and Thermal Management, 台灣化學工程學會 69 屆年會, December 2-3, 2022, 新北, 台灣.
5. Kai-Wen Chuang\*, **Ying-Chih Liao**, Superhydrophilic Cellulose Nanofiber Thin Films for Real-time Sweat Biosensor, 台灣化學工程學會 69 屆年會 · December 2-3, 2022, 新北 · 台灣.
6. Fang-Chen Kuo\*, **Ying-Chih Liao**, Liquid Metal Colloidal Ink for Multi-Layer Flexible Electronics, 台灣化學工程學會 69 屆年會 · December 2-3, 2022, 新北 · 台灣.
7. Wei-Cheng Chao\*, **Ying-Chih Liao**, Recycling of Thermosetting 3D-printed Products, 台灣化學工程學會 69 屆年會, December 2-3, 2022, 新北, 台灣.
8. Der-Yun Cheng\*, **Ying-Chih Liao**, Foam Filament Formation for 3D-Printed Lightweight Structures, 台灣化學工程學會 69 週年會, December 2-3, 2022, 新北, 台灣.
9. Wei-Cheng Chao\*, **Ying-Chih Liao**, Photo-cured Resin Recycling by Mechanical

Method, 2022 國際牙體技術學術大會暨牙科材料博覽會, November 5-6, 2022, 新北, 台灣.

10. Yi-Chen Weng\*, Ling-Hsuan Chen, **Ying-Chih Liao**, CNT Suspension in Thermally Conductive Photocurable Resin via Supercritical Fluid Technology, 3rd International Conference on Fluid Flow and Thermal Science (ICFFTS'22), October 27-28, 2022, Seoul, South Korea (Online).
11. Chia-Pei Chu\*, Muenduen Phisalaphong, **Ying-Chih Liao**, UV-curable conductive paste for screen-printed stretchable heating devices on textiles, 21<sup>st</sup> ISCST Symposium, September 11-14, 2022, Minneapolis, USA.
12. Hsuan-Chin Lu\*, **Ying-Chih Liao**, Total Liquid Transfer with Enhanced Contact Line Slippage, 21<sup>st</sup> ISCST Symposium, September 11-14, 2022, Minneapolis, USA.
13. Kai-Wen Chuang\*, **Ying-Chih Liao**, Superhydrophilic Cellulose Nanofiber Thin Films for Real-time Sweat Biosensor, 21<sup>st</sup> ISCST Symposium, September 11-14, 2022, Minneapolis, USA.
14. Der-Yun Cheng\*, **Ying-Chih Liao**, Foam Filament Formation for 3D-Printed Lightweight Structures, 2022 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, July 22th, 2022, 台中, 台灣
15. Ramachandran Balaji\*, Vengudusamy Renganathan, Chia-Pei Chu, **Ying-Chih Liao**, C.R. Kao, Shen-Ming Chen, 2022 年中華民國界面科學學會年會, July 22, 2022, 台中, 台灣.
16. Chia-Pei Chu\*, **Ying-Chih Liao**, Flowability enhancement of high solid fraction colloids, 2022 年中華民國界面科學學會年會, July 22, 2022, 台中, 台灣.
17. Hsuan-Chin Lu\*, **Ying-Chih Liao**, Enhancement of Contact Line Slippage for Total Liquid Transfer, 2022 年中華民國界面科學學會年會, July 22, 2022, 台中, 台灣.
18. Ding-Hong Weng\*, Yen-Chi Chen, **Ying-Chih Liao**, 汗水收集功能布料, 2022 年中華民國界面科學學會年會, July 22, 2022, 台中, 台灣.
19. Fang-Chen Kuo\*, **Ying-Chih Liao**, Optimized Surface Structure of Piezoresistive Pressure Sensor Supporting Device, 2022 年中華民國界面科學學會年會, July 22, 2022, 台中, 台灣.
20. Wei-Cheng Chao\*, **Ying-Chih Liao**, Mechanical Recycling of Photo Cured Thermoset Acrylic Resin Products, 2022 年中華民國界面科學學會年會, July 22, 2022, 台中, 台灣.
21. Wei-Cheng Chao\*, **Ying-Chih Liao**, Recycling of Photo-curing Resin by Adding Milled Printing Products to Pristine Resin, 12<sup>th</sup> Asian Coating Workshop, June 5-6, 2022, Kanazawa, Ishikawa, Japan (Online).
22. Hsuan-Chin Lu\*, **Ying-Chih Liao**, Efficient Droplet Transfer from Lubricant-Infused Surface, 12<sup>th</sup> Asian Coating Workshop, June 5-6, 2022, Kanazawa, Ishikawa, Japan (Online).

23. Chia-Pei Chu\*, **Ying-Chih Liao**, UV-Curing Stretchable Conductive Paste for Screen-Printed Wearable Heating Devices, 12<sup>th</sup> Asian Coating Workshop, June 5-6, 2022, Kanazawa, Ishikawa, Japan (Online)
24. Ting-Yu Cheng\*, and **Ying-Chih Liao**, *Reactive 3D Printing by Crosslinking Sodium Alginate on Gypsum Particle Surface*, 2022 台灣化學工程學會 68 周年年會 · January 6-7, 2022,高雄 · 台灣.
25. Yu-Chieh Chiu\* and **Ying-Chih Liao**, Selectively Permeable Laponite/PVA Coatings for Foldable Paper-based Printed Circuits,台灣化學工程學會 68 屆年會, January 6-7, 2022, Kaohsiung, Taiwan.
26. Chia-Pei Chu\*, **Ying-Chih Liao**, UV-Curing Stretchable Conductive Paste for Screen-Printed Wearable Heating Devices, 台灣化學工程學會 68 屆年會, January 6-7, 2022, Kaohsiung, Taiwan.
27. Kai-Wen, Chuang\*, **Ying-Chih Liao**, 高固含量  $\beta$ -磷酸三鈣穩定奈米懸浮水溶液製備及其於人工韌帶之應用,台灣化學工程學會 68 屆年會, January 6-7, 2022, Kaohsiung, Taiwan.
28. Wei-Cheng Chao and **Ying-Chih Liao\***, Recycling of Photo-curing Resin by Adding Milled Printing Products to Pristine Resin,台灣化學工程學會 68 屆年會, January 6-7, 2022, Kaohsiung, Taiwan.
29. Der-Yun Cheng\*, Yi-Hsiang Liao, Jia-shing Yu, **Ying-Chih Liao**, Microwave-assisted Synthesis of Hydrogel with High Mechanical Strength for Ultrasound Scanning, 台灣化學工程學會 68 週年會, January 6-7, 2022, 高雄, 台灣
30. Hsuan-Chin Lu \* and **Ying-Chih Liao**, Effect of Dynamic Contact Angle on Liquid Transfer for Gravure Printing,台灣化學工程學會 68 屆年會, January 6-7, 2022, Kaohsiung, Taiwan.
31. Jia-Sheng Tang\*, **Ying-Chih Liao**, Highly Conductive Transparent AgNW/CNF Film for Flexible Touch Panel, 台灣化學工程學會 68 屆年會, January 6-7, 2022, Kaohsiung, Taiwan.

## Honors& Others

### 職務

1. 2022年 第62屆台灣化學工程學會理事/第19屆中華民國界面科學學會理事
2. 2021年 第18屆中華民國界面科學學會理事長
3. 2019年-now ISCST board director

### 其他學術榮譽

1. 指導趙偉丞同學榮獲 2022 年台灣化學工程學會 69 屆年會壁報論文優勝獎
2. 指導鄭德鈞同學榮獲 2022 年台灣化學工程學會 69 屆年會壁報論文佳作獎
3. 指導趙偉丞同學榮獲 2022 TIDS 國際牙體技術學術大會暨牙科器材博覽會海報論文競賽基礎組第一名
4. 指導翁鼎泓同學榮獲 2022 年台灣紡織研究論文發表會壁報論文佳作
5. 指導鄭德鈞同學榮獲 2022 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界面科學海報競賽優等獎
6. 指導鄭庭宇同學榮獲 2022 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界面科學海報競賽特優獎
7. 指導呂宣瑾同學榮獲 2022 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界面科學海報競賽佳作獎
8. 指導 Balaji 博士後榮獲 2022 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奈米材料海報競賽佳作獎
9. 指導翁溢辰同學榮獲 2022 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奈米材料海報競賽優等獎
10. 指導邱鈺絜同學榮獲 2022 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奈米材料海報競賽特優獎
11. 指導唐嘉陞同學榮獲 2022 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薄膜應用海報競賽特優獎
12. 指導曲家霈同學榮獲 2022 年 110 學年度碩博士畢業論文展傑出論文優勝獎(獎金五千元)
13. 指導邱鈺絜同學榮獲 2022 年 110 學年度碩博士畢業論文展傑出論文優勝獎(獎金五千元)