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Professor

B.S. in Chemical Engineering

Tunghai University, Taiwan, 1986

M.S. in Materials Science and Engineering

Cornell University, USA, 1991

Ph.D. in Materials Science and Engineering

Cornell University, USA, 1996

Research and Professional Interests

Synthesis of Conducting Block Copolymers

Study of Self-Assembly Nanostructure

Structure-Property Relation

Rubbers and Filled Rubber Systems

Biological Material Development

Journal Papers

1. Yi-Huan Lee, Wei-Chih Chen, Kuo-Chang Kau, Yu-Ping Lee, Wei-Shin Liou, Leeyih Wang,* and **Chi-An Dai*** "A New Strategy for Fabricating Organic Photovoltaic Devices with Stable D/A Double-Channel Network to Enhance Performance Using Self-Assembling All-Conjugated Diblock Copolymer" *Nano Energy*, 13, 103, 2015.
2. Wei-Che Wu, Da-Ming Wang, Yu-Chen Lin, **Chi-An Dai**, Kuo-Chung Cheng, Mei-Shan Hu, and Bor-Shiunn Lee* "Hydrogen Bonds of a Novel Resin Cement Contribute to High Adhesion Strength to Human Dentin" *Dental Mater.* 32, 114, 2016.
3. Chi-Ju Chiang, Yi-Huan Lee, Yu-Ping Lee, Guan-Ting Lin, Ming-Hao Yang, Leeyih Wang, Chih-Chen Hsieh,* and **Chi-An Dai*** "One-Step In Situ Hydrothermal Fabrication of D/A Poly(3-hexylthiophene)/TiO₂ Hybrid Nanowires and Its Application in Photovoltaic Devices" *J. Mater. Chem. A*, 4, 908, 2016.
4. Ching Shen, Yi-Huan Lee, Yu-Ping Lee, Chi-Ju Chiang, Fan-Kai Wei, Chia-Hung Wu, Kuo-Chang Kau, Hung-Wei Liu, Chih-Chen Hsieh,* Leeyih Wang, and **Chi-An Dai**,* "Self-Organization and Phase Transformation of All pi-Conjugated Diblock Copolymers and Its Applications in Organic Solar Cells" *React. Funct. Polym.* 108, 94, 2016.
5. Bei-Kai Yang, **Chi-An Dai**, Chi-Ju Chiang, Chieh-Nan Lai, Chao-Cheng Hsu, and Jrjeng Ruan* "Influence of Dissolution Status in Eutectic Mixtures on Crystallization Routes of Semiconductive Polyalkylthiophenes" *Cryst. Growth. Des.* 16, 3143, 2016.
6. Chuen-Yo Hsiow, Yu-Hsiang Lin, Rathinam Raja, Syang-Peng Rwei, Wen-Yen Chiu, **Chi-An Dai**, Leeyih Wang, "Modified Structure of Two-Dimensional Polythiophene Derivatives by Incorporating Electron-Deficient Units into Terthiophene-Vinylene Conjugated Side Chains and Polymer Back bone: Synthesis, Optoelectronic and Self-Assembly Properties, and Photovoltaic Application" *RSC Advances*, 6, 67976, 2016.
7. Chuen-Yo Hsiow,* Han-Ying Wang, Yu-Hsiang Lin, Rathinam Raja, Syang-Peng Rwei, Wen-Yen Chiu, **Chi-An Dai**, Leeyih Wang* "Synthesis and Characterization of Two-Dimensional Conjugated Polymers Incorporating Electron-Deficient Moieties for Application in Organic Photovoltaics" *Polymers* 8, 382, 2016.
8. Ankur Anand, Chia-Rung Liu, Ai-Chuan Chou, Wan-Hsuan Hsu, Rajesh Kumar Ulaganathan, Yi-Cheng Lin, **Chi-An Dai**, Fan-Gang Tseng, Chien-Yuan Pan,* and Yit-Tsong Chen,* "Detection of K⁺ Efflux from Stimulated Cortical Neurons by an Aptamer-Modified Silicon Nanowire Field-Effect Transistor" *ACS Sensor*, 2, 69, 2017.
9. Po-Jen Shih, Chun-Ju Huang, Tzu-Han Huang, Hung-Chou Lin, Jia-Yush Yen, I-Jong Wang, Hui-Jyun Cao, Wen-Pin Shih and **Chi-An Dai** "Estimation of the corneal Young's modulus in vivo based on a fluid-filled spherical-shell model with Scheimpflug imaging" *J. of Ophthalmology*, 5410143, 2017.

10. Chueh-Hung Wu, Ming-Kuan Sun, Jay Shieh, Chuin-Shan Chen, Chang-Wei Huang, **Chi-An Dai**, Shu-Wei Chang, Wen-Shiang Chen, Tai-Horng Young, "Ultrasound-responsive NIPAM-based hydrogels with tunable profile of controlled release of large molecules" *Ultrasonics*, 83, 157, 2018.
11. Cheng-Hsi Weng, Cheng-Chuan Lin, Fu-Cheng Tsai, **Chi-An Dai**, Fu-Ling Yang, Wen-Pin Shih,* and Pei-Zen Chang "Photo-controllable contact angle hysteresis on an artificial Azo-IPN petal" *Mater. Lett.* 218, 81, 2018. (SCI) (IF: 2.572, 2016)
12. Yu-Ping Lee, Chi-Ju Chiang, Pin-Chia Jen, Bo-Ting Chou, Leeyih Wang, Yao-Yi Cheng, Yi-Huan Lee,* Yi-Fan Chen, Chih-Chen Hsieh, and **Chi-An Dai*** "Synergistic In Situ Hybrid Synthesis of Highly Crystalline P3HT/ZnO Nanowires at Elevated Pressures" *ACS Appl. Energy. Mater.* 1, 1930, 2018. (SCI) (IF:5.711)
13. Yu-Ping Lee, Hsin-Yu Liu, Po-Chun Lin, Yi-Huan Lee, Leng-Rong Yu, Chih-Chen Hsieh, Po-Jen Shih, Wen-Pin Shih, I-Jong Wang,* Jia-Yush Yen, and **Chi-An Dai*** "Facile Fabrication of Superporous and Biocompatible Hydrogel Scaffolds for Artificial Corneal Periphery" *Colloids and Surfaces B: Biointerfaces*, 175, 26, 2019. (SCI) (IF: 3.997)
14. Chien-Hsin Wu, Yu-Ru Lin, Shih-Chieh Yeh, Ya-Chin Huang, Kuo-Hua Sun, Yeng-Fong Shih, Wen-Chiung Su, Chi-An Dai, Shenghong A. Dai,* and Ru-Jong Jeng* "A Facile Synthetic Route to Ether Diols Derived from 1,1-Cyclopentylenebisphenol for Robust Cardo-Type Polyurethanes" *Macromolecules*, 52, 959, 2019. (SCI)
15. Yu-Ping Lee, Ming-Wei Liu, Jia-Kuan Qin, Yi-Huan Lee,* Yi-Lung Yang, Leeyih Wang, Yao-Yi Cheng, Yi-Fan Chen, Wen-Yu Liu, Chih-Chen Hsieh, and Chi-An Dai* "Long-Term Thermally Stable Nanoconfining Networks for Efficient Fully Conjugated Semicrystalline/Amorphous Diblock Copolymer Photovoltaics" *Org. Electron.* 69, 263, 2019. (SCI)
16. Yu-Jui Wang, Chi-An Dai, Jia-Han Li* "Numerical Study of Tunable Photonic Nanojets Generated by Biocompatible Hydrogel Core-Shell Microspheres for Surface-enhanced Raman Scattering Applications" *Polymers* 11, 431, 2019. (SCI)
17. Yoshihiro Ohta, Yuji Abe, Kenta Hoka, Eisuke Baba, Yu-Ping Lee, Chi-An Dai, Tsutomu Yokozawa,* "Synthesis of Amphiphilic, Janus Diblock Hyperbranched Copolyamides and Their Self-Assembly in Water" *Polymer Chemistry*, 10, 4246, 2019. (SCI)
18. Yu-Ping Lee, Chieh-Chuan Lin, Chih-Chung Hsiao, Po-An Chou, Yao-Yi Cheng, Chih-Chen Hsieh,* and Chi-An Dai* "Nanopiezoelectric Devices for Energy Generation Based on ZnO Nanorods/Flexible-Conjugated Copolymer Hybrids Using All-Wet Coating Processes" *Micromachines*, 11, 14, 2020. (SCI)

Conference Papers

1. "Co-Assembling P3HT/ZnO as Parallel-Lane Hybrid Nanowires for Photovoltaic Application" **Chi-An Dai**, Yi-Huan Lee, Yu-Ping Lee, Yang-Hui Yang, Leeyih Wang, American Physical Society March Meeting, March 2-6, 2015, San Antonio, TX, USA.
2. "Band Gap Tuning of Narrow-Polydispersity Two-Dimensional Conductive Polymers with Electroactive Side-Chains" Chi-Ju Chiang, **Chi-An Dai** et al. 台灣高分子年會 Jan. 30-31, 2015.
3. "In-Situ Fabrication of Poly(3-hexylthiophene)/ZnO Hybrid Nanowires with DA Parallel-Lane Structure and Their Application in Photovoltaic Devices" Yu-Ping Lee,

- Chi-An Dai et al.** 台灣高分子年會 Jan 30-31, 2015.
4. "Self-Organizing Solar Cell Application" **Chi-An Dai**, Yi-Huan Lee, Yu-Ping Lee, Chi-Ju Chiang, International Symposium on Functional Polymers & Integrated Materials, Kanagawa University, Yokohama, Japan, Oct. 3, 2015.
 5. "Self-assembled Pi-conjugated Polymers and Their Application in Photovoltaics" **Chi-An Dai et al.** 台灣高分子年會 Jan 29-30, 2016.
 6. "Self-Assembly Strategy for Polymer Solar Cells" **Chi-An Dai**, Kramer Memorial Symposium at University of California at Santa Barbara, USA Jan, 6-8, 2016.
 7. "Dynamic Mechanical Behavior of Thermoset Silica-Filled Rubber Blends" Chi-An Dai, Ya-Chin Chen, Yu-Tsen Liu, Jun-Yi Wang, Fang-Yen Lo, and Chih-Chen Hsieh, Symposium of Polymers Under Deformation, 253rd ACS National Meeting, San Francisco, CA, USA, Apr. 5, 2017.
 8. "積層製造之人工角膜材料開發暨應用" 周柏安·**戴子安**·台灣高分子年會 Jan 13-14, 2017.
 9. "Self-Assembly and Phase Transformations of All-Conjugated Poly(2,5-dihexyloxy-p-phenylene)-b-poly(3-hexylthiophene) Block Copolymer System" 李宜桓*, 許印天, 沈情, 李育凭, **戴子安**·台灣高分子年會, Jan 12-13, 2018.
 10. "Self-Assembly of Novel Supramolecular Rod-Comb Block Copolymer System" 李宜桓*, 莊延年, 張鈞傑, **戴子安**·台灣高分子年會, Jan 12-13, 2018.
 11. "The Grignard Metathesis Polymerization of Conjugated Polymers/Copolymers and its Applications in Solar Cells" **戴子安**·台灣高分子年會, Jan 12-13, 2018.
 12. "Nanoscale Self-Arrangement Approach for Fabricating Organic Solar Cells" **Chi-An Dai**, The 5th International Conference on Electronic Materials and Nanotechnology for Green Environment (ENGE2018), Jeju, Korea, Nov. 14, 2018
 13. "Design and Fabrication of Biocompatible Artificial Corneal Hydrogel for Additive Manufacturing" **Chi-An Dai**, The 15th International Conference on Automation Technology, Taichung, Taiwan, Dec. 6-8, 2018.
 14. "Nanoscale Self-Arrangement Approach for Fabricating Organic Solar Cells" **Chi-An Dai**, Sogang University-NTU ChemE Symposium on Nano & Bio Engineering, Taipei, Taiwan Dec. 14, 2018.
 15. "Synergistic Improvements in the pH Buffering of ZnO nanorod Composite Films" Yu-Ping Lee, Chieh-Chuan Lin, Yi-Huan Lee, **Chi-An Dai**, the 5th International Conference on Electronic Materials and Nanotechnology for Green Environment, November 2018, Jeju, Korea.
 16. "Facile in-Situ Synthesis of Highly Conductive EDOT/Aniline Copolymer Films" Yu-Ping Lee, Chieh-Chuan Lin, Yi-Huan Lee, **Chi-An Dai**, the 5th International Conference on Electronic Materials and Nanotechnology for Green Environment, November 2018, Jeju, Korea.
 17. "Synthesis of Amphiphilic All-Conjugated Diblock Copolymers and Their Applications in Organic/Inorganic Hybrid System" Ping-Yi Lin, Yu-Ping Lee, Yi-Huan Lee, **Chi-An**

- Dai**, Annual Meeting of the Polymer Society, January 2019, Southern Taiwan University of Science and Technology, Tainan, Taiwan.
18. "Design and Fabrication of Biocompatible Artificial Corneal Hydrogel for Additive Manufacturing" Jia-Kuan Qin, Yu-Ping Lee, Po-An Chou, Leng-Rong Yu, **Chi-An Dai**, Annual Meeting of the Polymer Society, January 2019, Southern Taiwan University of Science and Technology, Tainan, Taiwan.
 19. "Synthesis of porous hydrogel scaffolds for artificial corneal skirt by solvent-induced phase separation" Yu-Ping Lee, Hsin-Yu Liu, Po-Chun Lin, Yi-Huan Lee, Leng-Rong Yu, Chih-Chen Hsieh, Po-Jen Shih, Wen-Pin Shih, I-Jong Wang, Jia-Yush Yen, **Chi-An Dai**, Annual Meeting of the Polymer Society, January 2019, Southern Taiwan University of Science and Technology, Tainan, Taiwan.
 20. "Formulation development of stretchable conductive copper paste" Che-Min Chao, Wei-Hao Chou, Yu-Ping Lee, Yao-Yi Cheng, **Chi-An Dai**, Annual Meeting of the Polymer Society, January 2019, Southern Taiwan University of Science and Technology, Tainan, Taiwan.
 21. "Emulsion Synthesis of Nanoparticles Containing PEDOT Using Conducting Polymeric Surfactant: Synergy for Colloid Stability and Intercalation Doping" Kai-ching Chuang, Chun-Jie Chang, Hung-Yu Chi, Hung-Ta Chien, Wei-Fang Su, Wen-Yen Chiu, **Chi-An Dai**, Annual Meeting of the Polymer Society, January 2019, Southern Taiwan University of Science and Technology, Tainan, Taiwan.
 22. "Devising Organic Photovoltaics: Self-Organization in Nanoscale" Chi-An Dai, Yu-Ping Lee, Chi-Ju Chiang, and Yi-Huan Lee, The 2nd Sogang University-NTU ChemE Symposium on Nano & Bio Engineering, Seoul, South Korea Apr 3-5, 2019.
 23. "Self-Organization Strategy for Organic Photovoltaic Application" Chi-An Dai*, Yu-Ping Lee, Chi-Ju Chiang, and Yi-Huan Lee, National Institute for Materials Science, Tsukuba, Japan Jan. 15, 2020.