

Chen, Chia-Chin (陳嘉晉)

Assistant Professor

B.S. in Chemical Engineering
National Taiwan University, 2005
M.S. in Chemical Engineering
Illinois Institute of Technology, 2010
Ph.D. in Chemistry
University of Stuttgart, 2016

Research and Professional Interests

Electrochemistry
Semiconductor physics
Charge transport

Journal Papers

1. H.-W. Liu, S.-K. Parthasarathi, S. Thi, Y.-T. Weng, S. Bolloju, **C.-C. Chen***, R.-J. Jeng, N.-L. Wu, A comparative study of polycrystal/singlecrystal LiNi_{0.8}Co_{0.1}Mn_{0.1}O₂ in allsolidstate Liion batteries with halide-based electrolyte under low stacking pressure, *Energy Technology*, 2201439 (2023) <https://doi.org/10.1002/ente.202201439>
2. H.-W. Liu, C.-C. Lin, P.-Y. Chang, S.-C. Haw, H.-S. Sheu, J.-M. Chen, **Chia-Chin Chen**, R.-J. Jeng, N.-L. Wu, Reducing oxy-contaminations for enhanced Li-ion conductivity of halide-based solid electrolyte in water-mediated synthesis, *Journal of Solid State Electrochemistry*, 26, 2089 (2022) <https://doi.org/10.1007/s10008-022-05213-y>
3. C. Xiao, **C.-C. Chen**, J. Maier, Discrete modeling of ionic space charge zones in solids, *Physical Chemistry Chemical Physics*, 24, 11945 (2022) <https://doi.org/10.1039/D1CP05293D>
4. J. Park, H. Zhao, S. D. Kang, K. Lim, **C.-C. Chen**, Y.-S. Yu, R. D Braatz, D. A Shapiro, J. Hong, M. F Toney, M. Z Bazant, W. C Chueh, Fictitious phase separation in Li layered oxides driven by electro-autocatalysis, *Nature Materials*, 20, 991 (2021)
5. **C.-C. Chen**, Y. Yin, S. D. Kang, W. Cai, and W. C. Chueh, Electro-chemo-mechanical charge carrier equilibrium at interfaces, *Physical Chemistry Chemical Physics*, 41, 23730 (2021)
6. **C.-C. Chen**, J. Maier, Increased Storage through Heterogeneous Doping. *Chemistry of Materials*, 30, 5041-5049. (2018)
7. Qiubo Zhang, Zhe Shi, Kuibo Yin, Hui Dong, Feng Xu, Xinxing Peng, Kaihao Yu, Hongtao Zhang, **C.-C. Chen**, Ilia Valov, Haimei Zheng, Litao Sun, Spring-Like Pseudoelectroelasticity of Monocrystalline Cu₂S Nanowire. *Nano Letters*, 18, 5070-5077 (2018).
8. L. Fu, **C.-C. Chen**, J. Maier, Interfacial mass storage in nanocomposites. *Solid State Ionics* 318,54-59 (2018).
9. **C.-C. Chen**, E. Navickas, J. Fleig, J. Maier, Kinetics of space charge storage in composites. *Advanced Functional Materials*, 28, 1705999 (2018).
10. **C.-C. Chen**, J. Maier, Decoupling electron and ion storage and the path from interfacial storage to artificial electrodes. *Nature Energy*, 3, 102–108 (2018).

11. **C.-C. Chen**, J. Maier, Synergistic silver storage in the composite RbAg₄I₅:graphite: Thermodynamics and kinetics. *Solid State Ionics*, 312, 97–105 (2017).
12. R. M. L. McFadden, T. J. Buck, A. Chazichristos, **C.-C. Chen**, D. L. Cortie, K. H. Chow, M. H. Dehn, V. L. Karner, D. Koumoulis, D. P. Levy, C. Li, I. McKenzie, R. Merkle, G. D. Morris, M. R. Pearson, D. Samuelis, M. Stachura, J. Xiao, J. Maier, R. F. Kiefl, W. A. MacFarlane. Microscopic dynamics of Li⁺ in rutile TiO₂ revealed by ⁸Li β-Detected NMR. *Chemistry of Materials*, 10187–10197 (2017).
13. **C.-C. Chen**, J. R. Selman, Anode modeling of a molten-carbonate based direct carbon fuel cell. *Journal of Power Sources*, 353, 312-322 (2017).
14. C. Zhu, C. Wu, **C.-C. Chen**, P. Kopold, P. A. van Aken, J. Maier, Y. Yu, A high power-high energy Na₃V₂(PO₄)₂F₃ sodium cathode: Investigation of transport parameters, rational design and realization. *Chemistry of Materials*, 29(12), 5207–5215 (2017).
15. **C.-C. Chen**, J. Maier, Space charge storage in composites: thermodynamics. *Physical Chemistry Chemical Physics*, 19, 6379-6396 (2017).

Conference Papers

1. (Invited talk) **C.-C. Chen**, “Mixed Ion-Electron Transport in Composite Electrodes”, Asian Conference on Electrochemical Power Sources 11, Dec. 11-14, 2022, Singapore.
2. L.-Y. Lin and **C.-C. Chen**, "Simulation of Mixed Ion-Electron Transport in Composite Electrodes", Asian Conference on Electrochemical Power Sources 11, Dec. 11-14, 2022, Singapore.
3. M.-H. Lin, M.-Y. Lu and **C.-C. Chen**, “Intercalation of Charge Carrier in Micro-sized LaMnO₃ Particles”, the 69th TwIChE Annual Meeting of Taiwan Institute of Chemical Engineers, Dec. 3, 2022, New Taipei, Taiwan.
4. A.-R. Huang and **C.-C. Chen**, “Mixed Proton-Electron Conduction of Metal-Organic Frameworks”, the 69th TwIChE Annual Meeting of Taiwan Institute of Chemical Engineers, Dec. 2-3, 2022, Taipei, Taiwan.
5. C.-Y. Yang and **C.-C. Chen**, "Controlling Lithium Storage of Terephthalic Acid-Based MOFs in Lithium Ion Batteries" the 69th TwIChE Annual Meeting of Taiwan Institute of Chemical Engineers, Dec. 3, 2022, Taipei, Taiwan.
6. L.-Y. Lin and **C.-C. Chen**, "Simulation of Mixed Ion-Electron Transport in Composite Electrodes", the 69th TwIChE Annual Meeting of Taiwan Institute of Chemical Engineers, Dec. 2-3, 2022, New Taipei, Taiwan.
7. A.-R. Huang and **C.-C. Chen**, “Mixed Proton-Electron Conduction of Metal-Organic Frameworks”, The 2022 International Conference on Green Electrochemical Technologies (2022 ICGET-Tw) & 2022 Annual Meeting of Electrochemical Society of Taiwan, Nov. 10-12, 2022, Hsinchu, Taiwan.
8. C.-Y. Yang and **C.-C. Chen**, "Controlling Lithium Storage of Terephthalic Acid-Based Metal-Organic frameworks in Lithium Ion Batteries" The 2022 International Conference on Green Electrochemical Technologies and the 2022 Annual Meeting of Electrochemical Society of Taiwan, Nov. 11, 2022, Hsinchu, Taiwan.
9. L.-Y. Lin and **C.-C. Chen**, "Simulation of Mixed Ion-Electron Transport in Composite Electrodes",

International Conference on Green Electrochemical Technologies and Annual Meeting of Electrochemical Society of Taiwan, Nov. 10-12, 2022, Hsinchu, Taiwan.

10. M.-H. Lin, M.-Y. Lu and **C.-C. Chen**, “Intercalation of Charge Carrier in Micro-sized LaMnO₃ Particles”, the 2022 International Conference on Green Electrochemical Technologies and the 2022 Annual Meeting of Electrochemical Society of Taiwan, Nov. 12, 2022, Hsinchu, Taiwan
11. (Invited talk) **C.-C. Chen**, “Electro-Chemo-Mechanical Effects in Mixed Ionic–Electronic Conductors”, Electrochemical Society Meeting, May 30, 2022, Vancouver, Canada
12. M.-Y. Lu and **C.-C. Chen**, “Charge Storage in Perovskite Oxides for Pseudocapacitor Application”, the 68th TwIChE Annual Meeting of Taiwan Institute of Chemical Engineers, Jan. 6, 2022, Kaohsiung, Taiwan.
13. T.-H. Chen, C.-Y. Yang, P.-C. Han, C.-W. Wu, **C.-C. Chen**, “The Study of Electrical Conduction of Metal Organic Framework”, the 68th TwIChE Annual Meeting of Taiwan Institute of Chemical Engineers, Jan. 6, 2022, Kaohsiung, Taiwan.
14. **C.-C. Chen**, “Charge Transport in Solid State Ion Conductors: Bridging Mechanistic Understanding and Battery Performance”, Industrial Technology Research Institute, Sept., 8, 2021, Hsinchu, Taiwan.
15. **C.-C. Chen**, “Space Charge Effects in Electrochemical Energy Storage and Conversion” The 38th Taiwan Symposium on Catalysis and Reaction Engineering, July 17, 2020, Taipei, Taiwan.
16. **C.-C. Chen**, “Charge Transport in Electrochemical Materials”, 67th TwIChE Annual Meeting of Taiwan Institute of Chemical Engineers Oct 23, 2020, Hsinchu, Taiwan.
17. **C.-C. Chen**, “Interfacial Storage in Solid State Electrochemistry”, Annual Meeting of Electrochemical Society of Taiwan, Nov. 28, 2020, Taichung, Taiwan
18. **C.-C. Chen**, Y. Yin, S. D. Kang, W. Chueh, “Mechanical Effects at Electrochemical Interfaces”, O-HyLi symposium. Sept. 4, 2019, Evanston, USA.
19. **C.-C. Chen**, “The Electro-Chemo-Mechanical Effects at Interfaces”, 22nd International Conference on Solid State Ionics, June 20, 2019, PyeongChang, South Korea.
20. **C.-C. Chen**, “Mass Storage at Heterojunctions: Theory, Experimental Evidence, and Electrochemical Applications”, Starck-Promotionspreis (Best dissertation in Solid State Chemistry and Materials Science), Society of German Chemists, Sept. 26, 2018, Regensburg, Germany.
21. **C.-C. Chen**, “Job-sharing Storage in Composite Materials”, 68th International Society of Electrochemistry Annual Meeting, Aug. 31, 2017, Providence, USA
22. **C.-C. Chen**, “Mass Storage and Transport in Artificial Mixed Conductors”, 21st International Conference on Solid State Ionics, June 21, 2017, Padua, Italy.
23. **C.-C. Chen**, “Ultrafast Artificial Mixed Conductors”, 2017 Bunsentagung, May 26, 2017, Kaiserslautern, Germany.
24. **C.-C. Chen**, “Job-sharing Storage in Composite Materials”, EMRS 2017 Spring meeting, May 25, 2017, Strasbourg, France.
25. **C.-C. Chen**, “Job-sharing Storage in Composite Materials”, Oxide seminar, Max Planck Institute for Solid State Research, Apr. 12, 2017, Stuttgart, Germany.

Honors

1. Yushan young scholar fellowship, 2020.
2. Best Dissertation in Solid State Chemistry and Materials Science in Germany, 2018
3. Best Oral Presentation Award, 21st Solid State Ionics, 2017

Others

1. 指導凌樂研同學榮獲亞洲電化學會議亞洲電化學能源科技會議(ACEPS11)之最佳海報獎
2. 指導凌樂研同學榮獲 2022 年台灣化學工程學會 69 屆年會口頭報告論文佳作獎

