Yi-Hung Liu, Ph. D.

Associate Professor

Department of Chemical and Materials Engineering, National Central University (NCU).

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Education & Academic Affairs

Scholar Degree

1999-2003 B.S. in Chemical Engineering, National Taiwan University (**NTU**).

2003-2005 M.S. in Chemical Engineering, **NTU**.

2008-2012 Ph.D. in Chemical Engineering, Kyoto University.

Postdoc Fellowships

2013-2015 Advanced Institute of Science and Technology (AIST), Japan.

Visiting Research

2010.10-11 University of Leeds, UK.

Work Experience

Industrial

2012-2013 Power Systems Company of Toshiba, Japan.

2021-2022 Technical Advisor in CTCI Co., Ltd., Taiwan.

Academia

2015.02-2018.01 Assistant Professor in National University of Tainan (NUTN).

2015.08-2017.07 Director of the R&D Office, NUTN.

2018.02-2018.07 Associate Professor in NUTN.

2018.08-2020.07 Assistant Professor in NCU.

2020.08- Associate Professor of Dept. Chem. Mater. Eng., NCU.

2020.12- Supervisor, Carbon Society of Taiwan (CST).

Research Interests

1. Electrode materials-Carbon fiber-based composite.

2. Electrochemical synthesis-ED, EPD.

3. Lithium ion batteries-High-voltage cathode, Si-based anode, solid-state electrolyte.

4. Wastewater treatment-AOP, PEC.

Achievements and Honors

1. 2015-2018 Special Outstanding Talent Award for Recruited Faculty of College and University, Ministry of Education, Taiwan.
2. 2019-2022 Excellent New Faculty Award, NCU
3. 2019 Service-Learning Mentor Award, NCU
4. 2022 Outstanding Research Award, NCU

Publications (selected papers)

1. **Y. H. Liu**, H. Maruyama and S. Matsusaka* "Agglomeration process of dry ice particles produced by expanding liquid carbon dioxide" *Advanced Powder Technology* **2010**, 21, 652-657.
2. **Y. H. Liu***, T. Takasaki, K. Nishimura, S. Katsura, M. Yanagita, T. Sakai* "Preparation of fiber-type cathode and its electrode characteristics for sodium ion battery" *Journal of the Electrochemical Society* **2014**, 161, A1194-A1199.
3. **Y. H. Liu***, T. Takasaki, K. Nishimura, M. Yanagita, T. Sakai "Development of lithium ion battery using fiber-type lithium-rich cathode and carbon anode materials " *Journal of Power Sources* **2015**, 290, 153-158.
4. **Y. H. Liu***, S. Takeda, I. Kaneko, H. Yoshitake, M. Yanagida, Y. Saito, T. Sakai "An approach of evaluating the effect of vinylene carbonate additive on graphite anode for lithium ion battery at elevated temperature" *Electrochemistry Communications* **2015**, 61, 70-73.
5. **Y. H. Liu***, M. Okano, T. Mukai, K. Inoue, M. Yanagita, T. Sakai "Improvement of thermal stability and safety of lithium ion battery using SiO anode material" *Journal of Power Sources* **2016**, 304, 9-14.
6. **Y. H. Liu***, C. Y. Lin, J. H. Huang, S. C. Yen* "Particle removal performance and its kinetic behavior during oxide-CMP wastewater treatment by electrocoagulation" *Journal of the Taiwan Institute of Chemical Engineers* **2016**, 60,520-524.
7. **Y. H. Liu**, S. S. Liao, B. H. C. Liu* "Nanoscale electrochemical characterization of solid-state electrolyte using manganese-based thin-film probe" *Nanoscale* **2016**, 8,19978-19983.
8. **Y. H. Liu***, H. H. Lin, Y. J. Tai "Binder-free carbon fiber-based lithium-nickel-manganese-oxide composite cathode with improved electrochemical stability against high voltage: Effects of composition on electrode performance" *Journal of Alloys and Compounds* **2018**, 735,580-587.
9. **Y. H. Liu***, S. Takeda, I. Kaneko, H. Yoshitake, T. Mukai, M. Yanagida, Y. Saito, T. Sakai "Understanding the Improved High-Temperature Cycling Stability of a $LiNi_{0.5}Mn_{0.3}Co_{0.2}O_2$/Graphite Cell with Vinylene Carbonate: A Comprehensive Analysis Approach Utilizing LC-MS and DART-MS" *The Journal of Physical Chemistry C* **2018**, 122(11),5864-5870.
10. **Y. H. Liu**, X. Q. Peng, W. L. Chou* "Degradation of sulfamethazine by cerium mediated photoelectrochemical oxidation with hydroxyl radical oxidation effect" *Separation and Purification Technology* **2020**, 248,116929.
11. **Y. H. Liu***, C. H. Hung, C. L. Hsu* "Electrochemical fabrication of carbon fiber-based nickel hydroxide/carbon nanotube composite electrodes for improved electro-oxidation of the urea present in alkaline solutions" *Separation and Purification Technology* **2021**, 258,118002.
12. **Y. H. Liu***, T. Y. Tsai " Improving electrochemical performance of lithium ion batteries using a binder-free carbon fiber-based $LiNi_{0.5(1-x)}Mn_{1.5(1-x/3)}Cr_xO_4$ cathode with a conventional electrolyte" *Journal of Power Sources* **2021**, 484,22962.
13. **Y. H. Liu***, Y. S. Kuo, W. C. Liu, W. L. Chou* "Photoelectrocatalytic activity of perovskite $YFeO_3$/carbon fiber composite electrode under visible light irradiation for organic wastewater treatment" *Journal of the Taiwan Institute of Chemical Engineers* **2021**, 128,227-236.
14. **Y. H. Liu***, S. C. Shih, W. C. Liu, W. L. Chou* "Electrospun $YFeO_3$ and activated carbon nanofibers as electrodes for photoelectrochemical degradation of Orange II and sulfamethazine" *Journal of Water Process Engineering* **2022**, 47,102649.
15. **Y. H. Liu***, W. C. Chen, C. H. Hsueh, C. L. Hsu* "Elucidating the function of modified carbon blacks in high-voltage lithium-ion batteries: Impact on electrolyte decomposition" *Materials Today Chemistry* **2022**, 25,100934.
16. **Y. H. Liu***, Y. L. Chen, Y. S. Chen, S. M. Huang, H. M. Huang, S. J. Lin, C. Y. Yang "Utilization of $Si/SiO_x/Al_2O_3$ material from recycled solar cells for high-performance lithium-ion battery anode" *Green Chemistry* **2022**, 24, 5151-5161.