

# CURRICULUM VITAE

## Sung-Fu Hung

R431, Science Building II, 1001 University Road  
Department of Applied Chemistry  
National Yang Ming Chiao Tung University  
Hsinchu 300, Taiwan  
Phone: +886-3-5712121 #31946  
Email: [sungfuhung@nycu.edu.tw](mailto:sungfuhung@nycu.edu.tw)  
ORCID: [0000-0002-7423-2723](#)  
H index: [33](#); i10 index: [40](#)



## RESEARCH INTERESTS

1. Synthesis of nanostructural materials for (photo-)electrocatalysts
2. (Photo-)electrocatalysis: oxygen evolution reaction (OER), hydrogen evolution reaction (HER), oxygen reduction reaction (ORR), and CO<sub>2</sub> reduction reaction (CO<sub>2</sub>RR)
3. Flow systems for scalable water and CO<sub>2</sub> electrolysis
4. Development of *in-situ* technologies for (photo-)electrocatalysts: hard/soft X-ray absorption spectroscopy (XAS), high-energy-resolution fluorescence-detection X-ray absorption spectroscopy (HERFD-XAS), X-ray diffraction (XRD), Raman spectroscopy

## EDUCATION

<b>National Taiwan University</b> <i>Ph.D</i> in Chemistry (Advisor: Prof. Hao Ming Chen) Thesis: <i>Development of High-efficient Electrocatalysts and Photoelectrocatalysts and their in-/ex-situ analysis</i>	Sept. 2014 - Jun. 2018
<b>National Tsing-Hua University</b> <i>Master of Science</i> in Material Science and Engineering (Advisor: Prof. Chih-Huang Lai) Thesis: <i>The Study on Cadmium Sulfide Buffer Layer Prepared by Chemical Bath Deposition on CIGS Solar Cell Application</i>	Sept. 2008 - Aug. 2010
<b>National Tsing-Hua University</b> <i>Bachelor of Science</i> in Material Science and Engineering (Major) and Chemistry (Minor)	Sept. 2004 - Aug. 2008

## WORK EXPERIENCE

<b>Assistant Professor</b> , National Yang Ming Chiao Tung University	Aug 2020 - present
<b>Postdoctoral Research Fellow</b> , University of Toronto Advisor: Prof. Ted Sargent	May 2019 - May 2020
<b>Postdoctoral Research Fellow</b> , National Taiwan University Advisor: Prof. Hao Ming Chen	Sept. 2018 - May 2019
<b>Research Associate</b> , Nanyang Technological University Advisor: Prof. Bin Liu	Feb. 2014 - Sept. 2014
<b>Research Assistant</b> , National Taiwan University Advisor: Prof. Hao Ming Chen	Sept. 2013 - Feb. 2014
<b>Research Assistant</b> , Academia Sinica Advisor: Prof. Jiann-T'suen Lin and Prof. Shu-Hua Chien	Sept. 2010 - Aug. 2012

## HONORS

---

1. **Fellow of the Higher Education Academy (FHEA), UK, 2021**
2. Yushan Young Scholar, 2020
3. **IUPAC-Solvay International Award for Young Chemists, 2019** (5 winners per year international, the first winner in Taiwan)
4. **Lam Research Award, 2018**
5. The Best Thesis Award in Song-Pei Wu Applied Chemistry, Chemical Society Located in Taipei, 2018
6. Yen Thesis Award, PhD, National Taiwan University, 2018
7. Award of ScinoPharm Taiwan, 2018
8. Dean's Award, College of Science, National Taiwan University, 2018
9. CTCI Scholarship Award for Excellence in Research, 2017
10. Scholarship for doctoral candidate of National Synchrotron Radiation Research Center, 2017
11. Scholarship for doctoral candidate of National Synchrotron Radiation Research Center, 2016
12. Excellent teaching assistant award, National Taiwan University, 2016

## GRANTS

---

1. Ministry of Science and Technology Grant: 2030 Cross-Generation Young Scholars Program (MOST 110-2628-M-A49-002), 2021-2025
2. Ministry of Science and Technology Grant: Junior Researcher Program (MOST 110-2113-M-009-007-MY2), 2020-2022
3. Yushan Young Scholar Program, 2020-2025
4. Junior Faculty Research Enhancement Project (109W205), 2020
5. Taiwan Postdoctoral Research Abroad Program (MOST 108-2917-I-564-016), 2019-2020

## PUBLICATIONS (Published Articles: 49; Total Citation: 7770)

---

1. Peng, T.; Zhuang, T.-T.; Yan, Y. ; Qian, J.; Dick, G.; Behaghel de Bueren, J.; **Hung, S.-F.**; Zhang, Y.; Wang, Z.; Wicks, J.; Garcia de Arquer, F. P.; Abed, J.; Wang, N.; Sedighian Rasouli, A.; Lee, G.; Wang, M. ; He, D.; Wang, Z.; Liang, Z.; Song, L.; Wang, X.; Chen, B.; Ozden, A.; Lum, Y.; Leow, W. R.; Luo, M.; Motta Meira, D.; Ip, A.; Luterbacher, J.; Zhao, W.; Sargent, E. H. Ternary alloys enable efficient production of methoxylated chemicals via selective electrocatalytic hydrogenation of lignin monomers. *J. Am. Chem. Soc.* **2021**, accepted.
2. Chen, Z.-Y.; Niu, H.; Ding, J.; Liu, H.; Zuo, W.; Han L.; Guo, Y.\* **Hung, S.-F.**\* Zhai, Y.\* Unraveling the Origin of Sulfur-doped Fe-N-C Single Atom Catalyst for Enhanced Oxygen Reduction Activity: Effect of Fe-spin State Tuning. *Angew. Chem. Int. Ed.* **2021**, accepted. [[link](#)]
3. Zhang, J.; Xu, W.; Liu, Y.; **Hung, S.-F.**; Liu, W.; Lam, Z.; Tao, H. B.; Yang, H. B.; Cai, W.; Xiao, H.; Chen, H.; Liu, B. Precise Tuning of Intermediate Adsorption Energy on Bimetallic Surface for Boosting Oxygen Reduction Catalysis. *Nano Lett.* **2021**, *21*, 7753-7760. [[link](#)]
4. Li, X.; Zeng, Y.; Tung, C.-W.; Lu, Y.-R.; Baskaran, S.; **Hung, S.-F.**; Wang, S.; Xu, C.-Q.; Wang, J.; Chan, T.-S.; Chen, H. M.; Jiang, J.; Yu, Q.; Huang, Y.; Li, J.; Zhang, T.; Liu, B. Unveiling the In-Situ Generation of Monovalent Fe(I) Site in Single-Fe-Atom Catalyst for Electrochemical CO<sub>2</sub> Reduction. *ACS Catal.* **2021**, *11*, 7292-7301. [[link](#)]
5. Xu, Y.; Li, F.; Xu, A.; Edwards, J. P.; **Hung, S.-F.**; Gabardo C. M.; O'Brien, C. P.; Liu, S.; Wang, X.; Li, Y.; Wicks, J.; Miao, R. K.; Liu, Y.; Li, J.; Huang, J. E.; Abed, J.; Wang, Y.;

- Sargent, E. H.; Sinton, D. An Ultra-low Coordinated Copper Catalyst for Stable and Scalable Electrochemical CO<sub>2</sub> methanation. *Nature Commun.* **2021**, *12*, 2932. [[link](#)]
6. Li, X.; Cao, C.-S.; **Hung, S.-F.**; Lu, Y.-R.; Cai, W.; Rykov, A. I.; Miao, S.; Xi, S.; Yang, H.; Hu, Z.; Wang, J.; Zhao, J.; Alp, E. E.; Xu, W.; Chan, T.-S.; Chen, H.; Xiong, Q.; Xiao, H.; Huang, Y.; Li, J.; Zhang, T.; Liu, B. Identification of the Electronic and Structural Dynamics of Catalytic Centers in Single-Fe-Atom Material. *Chem* **2020**, *6*, 3440-3454. [[link](#)]
7. Li, Y.; Xu, A.; Lum, Y.; Wang, X.; **Hung, S.-F.**; Chen, B.; Wang, Z.; Xu, Y.; Li, F.; Abed, J.; Rasouli, A. S.; Wick, J.; Sagar, L. K.; Peng, T.; Ip, A. H.; Sinton, D.; Jiang, H.; Li, C.; Sargent, E. H. Promoting CO<sub>2</sub> Methanation via Ligand-stabilized Metal Oxide Clusters as Hydrogen-donating Motifs. *Nature Commun.* **2020**, *11*, 6190. [[link](#)]
8. **Hung, S.-F.\*** Electrochemical Flow Systems Enable Renewable Energy Industrial Chain of CO<sub>2</sub> Reduction. *Pure Appl. Chem.* **2020**, *92*, 1937-1951. (*Invited article in Diamond Jubilee Issue to celebrate the 60th anniversary of Pure and Applied Chemistry*) [[link](#)]
9. Ozden, A.; Li, F.; Garcia de Arquer, F. P.; Rosas-Hernández, A.; Thevenon, A.; Wang, Y.; **Hung, S.-F.**; Wang, X.; Chen, B.; Li, J.; Wicks, J.; Luo, M.; Wang, Z.; Agapie, T.; Peters, J.; Sargent, E. H.; Sinton, D. High-rate and efficient ethylene electrosynthesis using a catalyst:promoter:transport layer. *ACS Energy Lett.* **2020**, *5*, 2811-2818. [[link](#)]
10. Wang, Q.; Xu, C.-Q.; Liu, W.; **Hung, S.-F.**; Yang, H. B.; Gao, J.; Cai, W.; Chen, H. M.; Li, J.; Liu, B. Coordination Engineering of Iridium Nanocluster Bifunctional Electrocatalyst for Highly Efficient and pH-universal Overall Water Splitting. *Nature Commun.* **2020**, *11*, 4246. [[link](#)]
11. Jiang, L.; Liu, K.; **Hung, S.-F.**; Zhou, L.; Qin, R.; Zhang, Q.; Liu, P.; Gu, L.; Chen, H. M.; Fu, G.; Zheng, N. Facet Engineering Accelerates Spillover Hydrogenation on Highly Diluted Metal Nanocatalysts. *Nature Nanotechnol.* **2020**, *15*, 848-853. [[link](#)]
12. **Hung, S.-F.\*** In-situ X-ray Techniques for non-noble Electrocatalysts. *Pure Appl. Chem.* **2020**, *92*, 733-749. (*Invited review for IUPAC-Solvay International Award for Young Chemists*) [[link](#)]
13. Cai, W.; Chen, R.; Yang, H.; Tao, H. B.; Wang, H.-Y.; Gao, J.; Liu, W.; Liu, S.; **Hung, S.-F.**; Liu, B. Amorphous vs Crystalline in Water Oxidation Catalysis: A Case Study of NiFe alloy. *Nano Lett.* **2020**, *20*, 4278-4285. [[link](#)]
14. Wang, X.; Wang, Z.; García de Arquer, F. P.; Dinh, C.-T.; Ozden, A.; Li, C. Y.; Nam, D.-H.; Li, J.; Liu, Y.-S.; Wicks, J.; Chen, Z.; Chi, M.; Chen, B.; Wang, Y.; Tam, J.; Howe, J. Y.; Proppe, A.; Todorović, P.; Li, F.; Zhuang, T.-T.; Gabardo C. M.; Kirmani, A. R.; McCallum, C.; **Hung, S.-F.**; Lum, Y.; Luo, M.; Min, Y.; Xu, A.; O'Brien, C. P.; Stephen, B.; Sun, B.; Ip, A. H.; Richter, L. J.; Kelley, S. O.; Sinton, D.; Sargent, E. H. Efficient Electrically-powered CO<sub>2</sub>-to-ethanol via Suppression of Deoxygenation. *Nature Energy* **2020**, *5*, 478-486. [[link](#)]
15. Wang, X.; Xu, A.; Li, F.; **Hung, S.-F.**; Nam, D.-H.; Gabardo, C. M.; Wang, Z.; Xu, Y.; Ozden, A.; Rasouli, A. S.; Ip, A. H.; Sinton, D.; Sargent, E. H. Efficient Methane Electrosynthesis Enabled by Tuning Local CO<sub>2</sub> Availability. *J. Am. Chem. Soc.* **2020**, *142*, 3525-3531. [[link](#)]
16. Gao, J.; Yang, H. B.; Huang, X.; **Hung, S.-F.**; Cai, W.; Jia, C.; Miao, S.; Chen, H. M.; Yang, X.; Huang, Y.; Zhang, T.; Liu, B. Enabling Direct H<sub>2</sub>O<sub>2</sub> Production in Acidic Media through Rational Design of Transition Metal Single Atom Catalyst. *Chem* **2020**, *6*, 658-674. [[link](#)]
17. Li, F.; Li, C. Y.; Wang, Z.; Li, J.; Nam, D.-H.; Lum, Y.; Luo, M.; Wang, X.; Ozden, A.; **Hung, S.-F.**; Chen, B.; Wang, Y.; Wicks, J.; Xu, Y.; Li, Y.; Gabardo C. M.; Dinh, C.-T.; Wang, Y.; Zhuang, T.-T.; Sinton, D.; Sargent, E. H. Cooperative CO<sub>2</sub>-to-ethanol Conversion via Enriched Intermediates at Molecule:Metal Catalyst Interfaces. *Nature Catal.* **2020**, *3*, 75-82. [[link](#)]
18. Liu, S.; Yang, H. B.; **Hung, S.-F.**; Ding, J.; Cai, W.; Liu, L.; Gao, J.; Li, X.; Ren, X.; Kuang, Z.; Huang, Y.; Zhang, T.; Liu, B. Electrifying Model Single-atom Catalyst for Elucidating the CO<sub>2</sub> Reduction Reaction. *Angew. Chem. Int. Ed.* **2020**, *59*, 798-803. (*Inside Cover*) [[link](#)]

19. Chang, C.-J.; **Hung, S.-F.**; Hsu, C.-S.; Chen, H.-C.; Lin, S.-C.; Liao, Y.-F.; Chen, H. M. Quantitatively Unraveling the Redox Shuttle of Spontaneous Oxidation/Electroreduction of CuO<sub>x</sub> on Silver Nanowires Using in Situ X-ray Absorption Spectroscopy. *ACS Cent. Sci.* **2019**, *5*, 1998-2009. (*Front Cover*) [[link](#)]
20. **Hung, S.-F.**; Zhu, Y.; Tzeng, G.-Q.; Chen, H.-C.; Hsu, C.-S.; Liao, Y.-F.; Ishii, H.; Hiraoka, N.; Chen H. M. *In Situ* Spatially Coherent Identification of Phosphide-based Catalysts: Crystallographic Latching for High-efficient Overall Water Electrolysis. *ACS Energy Lett.* **2019**, *4*, 2813-2820. [[link](#)]  
➤ *Highlighted in the virtual issue “Why Seeing is Not Always Believing: Common Pitfalls in Photocatalysis and Electrocatalysis” in ACS Energy Letters.*
21. Chen, R.; **Hung, S.-F.**; Zhou, D.; Gao, J.; Yang, C.; Tao, H.; Yang, H. B.; Zhang, L.; Xiong, Q.; Chen H. M.; Liu, B. Layered Structure Causes Bulk NiFe Layered Double Hydroxide Unstable in Alkaline Oxygen Evolution Reaction. *Adv. Mater.* **2019**, *31*, 1903909. [[link](#)]
22. Yuan, L.; **Hung, S.-F.**; Tang, Z.-R.; Chen, H. M.; Xiong, Y.; Xu, Y.-J. Dynamic Evolution of Atomically Dispersed Cu Species for CO<sub>2</sub> Photoreduction to Solar Fuels. *ACS Catal.* **2019**, *9*, 4824-4833. [[link](#)]
23. Chen, G.; Zhu, Y.; Chen, H. M.; Hu, Z.; **Hung, S.-F.**; Ma, N.; Dai, J.; Lin, H.-J.; Chen, C.-T.; Zhou, W.; Shao, Z. An Amorphous Nickel–Iron-Based Electrocatalyst with Unusual Local Structures for Ultrafast Oxygen Evolution Reaction. *Adv. Mater.* **2019**, *31*, 1900883. [[link](#)]
24. Jiao, J.; Lin, R.; Liu, S.; Cheong, W.-C.; Zhang, C.; Chen Z.; Pan, Y.; Wu, K.; **Hung, S.-F.**; Chen, H. M.; Zheng, L. R.; Lu, Q.; Yang, X.; Xu, B.; Xiao, H.; Li, J.; Wang, D.; Peng, Q.; Chen, C.; Li, Y. Cu Atom-pair Catalyst Anchored on Alloy Nanowires for Selective and Efficient Electrochemical Reduction of CO<sub>2</sub>. *Nature Chem.* **2019**, *11*, 222-228. [[link](#)]
25. Gao, J.; Xu, C.-Q.; **Hung, S.-F.**; Liu, W.; Cai, W.; Zeng, Z.; Jia, C.; Chen, H. M.; Xiao, H.; Li, J.; Huang, Y.; Liu, B. Breaking Long-Range Order in Iridium Oxide by Alkali Ion for Efficient Water Oxidation. *J. Am. Chem. Soc.* **2019**, *141*, 3014-3023. [[link](#)]  
➤ *One of the most highly cited publications in JACS for the period 2019-2019.*
26. **Hung, S.-F.**; Chan, Y.-T.; Chang, C.-C.; Tsai, M.-K.; Liao, Y.-F.; Hiraoka, N.; Hsu, C.-S.; Chen, H. M. Identification of Stabilizing High-valent Active Sites by *Operando* High-energy Resolution Fluorescence-detected X-ray Absorption Spectroscopy for High-Efficiency Water Oxidation. *J. Am. Chem. Soc.* **2018**, *140*, 17263-17270. [[link](#)]  
➤ *Highlighted in NSRRC 2019 Newsletter.*
27. Hsu, S.-H.; **Hung, S.-F.**; Wang, H.-Y.; Xiao, F.-X.; Zhang, L.; Yang, H.; Chen, H. M.; Lee, J.-M.; Liu, B. Tuning the Electronic Spin State of Catalysts by Strain Control for Highly Efficient Water Electrolysis. *Small Methods* **2018**, *2*, 1800001. [[link](#)]
28. Hsu, S.-H.; Miao, J.; Zhang, L.; Gao, J.; Wang, H.; Tao, H.; **Hung, S.-F.**; Vasileff, A.; Qiao, S. Z.; Liu B. An Earth-Abundant Catalyst-Based Seawater Photoelectrolysis System with 17.9% Solar-to-Hydrogen Efficiency. *Adv. Mater.* **2018**, *30*, 1707261. [[link](#)]
29. **Hung, S.-F.**; Chen, Z.-Z.; Chang, C.-C.; Hsu, C.-S.; Tsai, M.-K.; Kang, C.-C.; Chen, H. M. Dual-Hole Excitons Activated Photoelectrolysis in Neutral Solution. *Small* **2018**, *14*, 1704047. (*Frontispiece*) [[link](#)]
30. Yang, H.; **Hung, S.-F.**; Liu, S.; Yuan, K.; Miao, S.; Zhang, L.; Huang, X.; Wang, H.-Y.; Cai, W.; Chen, R.; Gao, J.; Yang, X.; Chen, W.; Huang, Y.; Chen, H. M.; Li, C.; Zhang, T.; Liu, B. Atomically Dispersed, Low valent Ni(I) as the Active Site for Electrochemical CO<sub>2</sub> Reduction. *Nature Energy* **2018**, *3*, 140-147. [[link](#)]
31. Ma, L.; **Hung, S.-F.**; Zhang, L.; Cai, W.; Yang, H. B.; Chen, H. M.; Liu, B. High Spin State Promotes Water Oxidation Catalysis at Neutral pH in Spinel Cobalt Oxide. *Ind. Eng. Chem. Res.* **2018**, *57*, 1441-1445. [[link](#)]

32. **Hung, S.-F.**; Hsu, Y.-Y.; Chang, C.-J.; Hsu, C.-S.; Suen, N.-T.; Chan, T.-S.; Chen, H. M. Unraveling Geometrical Site Confinement in Iron-Doped Electrocatalysts toward Oxygen Evolution Reaction. *Adv. Energy Mater.* **2018**, *8*, 1701686. (*Back Cover*) [link]  
➤ Highlighted as a *research news* in National Synchrotron Radiation Research Center.
33. Ma, Q.; Hu, C.; Liu, K.; **Hung, S.-F.**; Ou, D.; Chen, H. M.; Fu, G.; Zheng, N. Identifying the Electrocatalytic Sites of Nickel Disulfide in Alkaline Hydrogen Evolution Reaction. *Nano Energy* **2017**, *41*, 148-153. [link]
34. Hu, C.; Ma, Q.; **Hung, S.-F.**; Chen, Z.; Ren, B.; Chen, H. M.; Fu, G.; Zheng, N. In Situ Electrochemical Production of Ultrathin Nickel Nanosheets for Efficient Hydrogen Evolution Electrocatalysis. *Chem* **2017**, *3*, 122-133. [link]
35. Suen, N.-T.; **Hung, S.-F.**; Quan, Q.; Zhang, N.; Xu, Y.-J.; Chen, H. M. Electrocatalysis for the Oxygen Evolution Reaction: Recent Development and Future Perspectives. *Chem. Soc. Rev.* **2017**, *46*, 337-365. (*Front Cover*) [link]
36. Wang, H.-Y.; **Hung, S.-F.**; Hsu, Y.-Y.; Zhang, L.; Miao, J.; Chan, T.-S.; Xiong, Q.; Liu, B. In-Situ Spectroscopic Identification of  $\mu$ -OO Bridging on Spinel  $\text{Co}_3\text{O}_4$  Water Oxidation Electrocatalyst. *J. Phys. Chem. Lett.* **2016**, *7*, 4847-4853. [link]
37. Gao, J.; Jia, C.; Zhang, L.; Wang, H.; Yang, Y.; **Hung, S.-F.**; Hsu, Y.-Y.; Liu, B. Tuning Chemical Bonding of  $\text{MnO}_2$  through Transition-Metal Doping for Enhanced CO Oxidation. *J. Catal.* **2016**, *341*, 82-90. [link]
38. **Hung, S.-F.**; Tung, C.-W.; Chan, T.-S.; Chen, H. M. In-Situ Morphological Transformation and Investigation of Electrocatalytic Properties of Cobalt Oxide Nanostructures toward Oxygen Evolution. *CrystEngComm* **2016**, *18*, 6008. [link]
39. Yang, H. B.; Miao, J.; **Hung, S. F.**; Chen, J.; Tao, H. B.; Wang, X.; Zhang, L.; Chen, R.; Gao, J.; Chen, H. M.; Dai, L.; Liu, B. Identification of Catalytic Sites for Oxygen Reduction and Oxygen Evolution in N-Doped Graphene Materials: Development of Highly Efficient Metal-Free Bifunctional Electrocatalyst. *Science Adv.* **2016**, *2*, e1501122. [link]
40. **Hung, S.-F.**; Xiao, F.-X.; Hsu, Y.-Y.; Suen, N.-T.; Yang, H. B.; Chen, H. M.; Liu, B. Iridium Oxide-Assisted Plasmon-Induced Hot Carriers: Improvement on Kinetics and Thermodynamics of Hot Carriers. *Adv. Energy Mater.* **2016**, *6*, 1501339. (*Back Cover*) [link]  
➤ Highlighted in *MaterialsViewsChina* and *NSRRC 2016 Newsletter*.
41. Wang, H.-Y.; **Hung, S.-F.**; Chen, H.-Y.; Chan, T.-S.; Chen, H. M.; Liu, B. In Operando Identification of Geometrical-Site-Dependent Water Oxidation Activity of Spinel  $\text{Co}_3\text{O}_4$ . *J. Am. Chem. Soc.* **2016**, *138*, 36-39. [link]
42. **Hung, S.-F.**; Yu, Y.-C.; Suen, N.-T.; Tzeng, G.-Q.; Tung, C.-W.; Hsu, Y.-Y.; Hsu, C.-S.; Chang, C.-K.; Chan, T.-S.; Sheu, H.-S.; Lee, J.-F.; Chen, H. M. The Synergistic Effect of a Well-Defined Au@Pt Core-Shell Nanostructure Toward Photocatalytic Hydrogen Generation: Interface Engineering to Improve the Schottky Barrier and Hydrogen-Evolved Kinetics. *Chem. Commun.* **2016**, *52*, 1567-1570. (*Inside Cover*) [link]  
➤ Highlighted as a *research news* in National Synchrotron Radiation Research Center.
43. Xiao, F.-X.; Zeng, Z.; Hsu, S.-H.; **Hung, S.-F.**; Chen, H. M.; Liu, B. Light-Induced in Situ Transformation of Metal Clusters to Metal Nanocrystals for Photocatalysis. *ACS Appl. Mater. Interfaces* **2015**, *7*, 28105-28109. [link]
44. Hsu, Y.-Y.; Suen, N.-T.; Chang, C.-C.; **Hung, S.-F.**; Chen, C.-L.; Chan, T.-S.; Dong, C.-L.; Chan, C.-C.; Chen, S.-Y.; Chen, H. M. Heterojunction of Zinc Blende/Wurtzite in  $\text{Zn}_{1-x}\text{Cd}_x\text{S}$  Solid Solution for Efficient Solar Hydrogen Generation: X-Ray Absorption/Diffraction Approaches. *ACS Appl. Mater. Interfaces* **2015**, *7*, 22558-22569. [link]
45. Xiao, F.-X.; **Hung, S.-F.**; Tao, H. B.; Miao, J.; Yang, H. B.; Liu, B. Spatially Branched Hierarchical  $\text{ZnO}$  Nanorod-TiO<sub>2</sub> nanotube Array Heterostructures for Versatile Photocatalytic

- and Photoelectrocatalytic Applications: Towards Intimate Integration of 1D–1D Hybrid Nanostructures. *Nanoscale* **2014**, *6*, 14950–14961. [link]
- 46. Xiao, F.-X.; Miao, J.; Tao, H. B.; **Hung, S.-F.**; Wang, H.-Y.; Yang, H. B.; Chen, J.; Chen, R.; Liu, B. One-Dimensional Hybrid Nanostructures for Heterogeneous Photocatalysis and Photoelectrocatalysis. *Small* **2015**, *11*, 2115–2131. [link]
  - 47. Yang, H. B.; Miao, J.; **Hung, S.-F.**; Huo, F.; Chen, H. M.; Liu, B. Stable Quantum Dot Photoelectrolysis Cell for Unassisted Visible Light Solar Water Splitting. *ACS Nano* **2014**, *8*, 10403–10413. [link]
  - 48. Xiao, F.-X.; **Hung, S.-F.**; Miao, J.; Wang, H.-Y.; Yang, H.; Liu, B. Metal-Cluster-Decorated TiO<sub>2</sub> Nanotube Arrays: a Composite Heterostructure Toward Versatile Photocatalytic and Photoelectrochemical Applications. *Small* **2014**, *11*, 554–567. [link]
  - 49. Hsu, S.-H.; **Hung, S.-F.**; Chien, S.-H. CdS Sensitized Vertically Aligned Single Crystal TiO<sub>2</sub> Nanorods on Transparent Conducting Glass with Improved Solar Cell Efficiency and Stability Using ZnS Passivation Layer. *J. Power Sources* **2013**, *233*, 236–243. [link]

## ACADEMIC ACTIVITIES

---

### Committees & Organizers

- 1. **Organizer** - Symposium 2 Photocatalysis and Photosynthesis in the Material Research Society-Taiwan International Conference (MRSTIC), 2021
- 2. **Review Editor Board** - *Frontiers in Catalysis, Frontiers*, 2021
- 3. **Guest Editor** - Special Issue "Nanomaterials for Electrochemical Energy Conversion" *Nanomaterials, MDPI*, 2021.

### Oral presentation & Invited talk

- 1. **Invited talk** - Department of Chemical Engineering, National Tsing Hua University, Hsinchu, Taiwan, 2021.
- 2. **Invited talk** - Department of Material Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan, 2021.
- 3. **Invited talk** - Annual Meeting of Chemical Society Located in Taipei, Taiwan, 2021
- 4. **Invited talk** - Department of Chemical Engineering, National Cheng Kung University, Tainan, Taiwan, 2021.
- 5. **Invited talk** - Department of Chemistry, National Tsing Hua University, Hsinchu, Taiwan, 2020.
- 6. **Invited talk** - Center for Condensed Matter Sciences, National Taiwan University, Taipei, Taiwan, 2020.
- 7. **Invited talk** - Department of Material Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan, 2020.
- 8. **Invited talk** - Annual Meeting of Catalysis Society of Taiwan, Taipei, Taiwan, 2020
- 9. **Invited talk** - Department of Material Science and Engineering, Fuzhou University, Fujian, China, 2019
- 10. **Invited talk** - Department of Electrical and Computer Engineering, Toronto University, Canada, 2018
- 11. 24<sup>th</sup> User's Meeting & Workshops, National Synchrotron Radiation Research Center, Hsinchu, Taiwan, 2018  
➤ **Award of Recognition** in student oral presentation in material science
- 12. Symposium for Peking University-National Taiwan University, Taipei, Taiwan, 2018

13. **HERCULES** (Higher European Research Course for Users of Large Experimental Systems) **European School**, 25 Feb - 30 Mar, Grenoble, France, 2018
14. 23<sup>rd</sup> User's Meeting & Workshops, National Synchrotron Radiation Research Center, Hsinchu, Taiwan, 2017  
➤ *Award of Recognition in student oral presentation in material science*
15. Symposium for Peking University-National Taiwan University, Peking, China, 2017
16. 253<sup>rd</sup> ACS National Meetings & Expositions, San Francisco, USA, 2017
17. **Invited talk** - National Synchrotron Radiation Research Center, Hsinchu, Taiwan, 2017
18. 22<sup>nd</sup> User's Meeting & Workshops, National Synchrotron Radiation Research Center, Hsinchu, Taiwan, 2016  
➤ *Award of Outstanding Research in student oral presentation in material science*
19. 3<sup>th</sup> Annual Junior Chemist Meeting on Frontier Molecular Science, Yilan, Taiwan, 2016

## Poster presentation

1. 26<sup>th</sup> User's Meeting & Workshops, National Synchrotron Radiation Research Center, Hsinchu, Taiwan, 2020
2. 25<sup>th</sup> User's Meeting & Workshops, National Synchrotron Radiation Research Center, Hsinchu, Taiwan, 2019
3. IUPAC 2019, Paris, France, 2019
4. Annual Meeting of Chinese Chemical Society, Kaohsiung, Taiwan, 2018  
➤ *Outstanding Poster Award & IUPAC Poster Prize*
5. MRS Fall Meeting, Boston, USA, 2018
6. 12<sup>th</sup> International Symposium for Chinese Inorganic Chemists, Taipei, Taiwan, 2018
7. Graduate Student Poster Competition, National Taiwan University, 2018  
➤ *Outstanding Poster Award of NTU Chemistry, PhD*
8. 3<sup>rd</sup> ACS Taiwan Chapter Graduate Student Conference, Taipei, Taiwan, 2018
9. 10<sup>th</sup> Exchange Symposium for Kanagawa University-National Taiwan University, Taipei, Taiwan, 2015

## EDUCATIONAL ACTIVITIES

---

### Teaching courses

1. **Inorganic Chemistry Research Techniques** (2021) - No assigned textbook.
2. **General Chemistry** (2020) - Textbook: "University Chemistry" Brian B. Laird, McGraw Hill, 2009.

### Graduate Defense committees

1. **Yi-Chen Lin** (Master, Advisor: Prof. Hsueh-Ju Liu, National Yang Ming Chiao Tung University): *A Dianionic Ligand Supported Lewis Acidic and Zwitterionic Tin(II) Complex as Synthons for Multi-Metallic Structures*, 2021.
2. **Tsai-Min Yeh** (Master, Advisor: Prof. Hsin-Yun Hsu, National Yang Ming Chiao Tung University): *Green Synthesis of Redox-Responsive Mesoporous Silica Nanoparticles*, 2021.
3. **Bao-Ting Huang** (Master, Advisor: Prof. Hsin-Yun Hsu, National Yang Ming Chiao Tung University): *Titanium Dioxide Nanomaterial-Mediated Photo-Crosslinking Soy Protein Hydrogel Synthesis*, 2021.
4. **Hao-Cheng Lin** (Master, Advisor: Prof. Hsin-Yun Hsu, National Yang Ming Chiao Tung University):, 2021.

5. **Yi-Yun Lin** (Master, Advisor: Prof. Chi-Shen Lee, National Yang Ming Chiao Tung University): *Synthesis, Characterization and Thermoelectric Properties of Three New Pavonite Selenides in Quaternary Fe-Ge-Sb-Se System*, 2021.
6. **Yu-Ping Hsieh** (Master, Advisor: Prof. Chi-Shen Lee, National Yang Ming Chiao Tung University): *Nickel Oxide Catalyst Supported on Lanthanum Zirconates  $NiO/Ln_2Zr_2O_7(Ln=La, Nd, Gd, Ho)$  and its effect on the Oxidative Steam Reforming of Ethanol*, 2021.
7. **Hsin-Hui Lee** (Master, Advisor: Prof. Chi-Shen Lee, National Yang Ming Chiao Tung University): *Effect of Y and Ru Substituted Fluorite Structure  $Y_xZr_{1-x-y}Ru_yO_{2-\delta}(x=0.33-0.57, y=0.01-0.13)$  and Ultrasonic Wave-Assisted Ball Milling Catalysts Used in Oxidative Steam Reforming of Ethanol*, 2021.
8. **Zih-Lin Yang** (Master, Advisor: Prof. Hsuan-Yi Huang, National Tsing Hua University): *Synthesis of Size-Tunable CdSe Nanocrystals and Their Optical and Electrochemical Properties*, 2021.
9. **Tsung-Ying Tsai** (Master, Advisor: Prof. Shu-Pao Wu, National Yang Ming Chiao Tung University): *Design and Synthesis of Hydroxycoumarin Derivative Fluorescent Chemosensor and its Applications in Living Cells*, 2020.
10. **Shu-Pei Wu** (Master, Advisor: Prof. Hsin-Yun Hsu, National Yang Ming Chiao Tung University): *Exploration of the Nucleotide-Based Hydrogel Formation and the Biofuel Application*, 2020.
11. **Yi-Ying Lin** (Master, Advisor: Prof. Hsin-Yun Hsu, National Yang Ming Chiao Tung University): *Fabrication of Gallic Acid-Formaldehyde Microspheres for Antibacterial Applications*, 2020.