

1. Personal details

Name: Asst/P Edison Ang Huixiang
Nationality: Singaporean
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2. Employment History

Nanyang Technological University of Singapore

Jan 2021 to present

Natural Sciences and Science Education

National Institution of Education, Singapore 637616, Singapore

Assistant Professor

- Teaching graduate courses (i.e., MLS923 Separation and Analytical Chemistry and MLS924 Materials Chemistry) and undergraduate courses (i.e., AAY40C Materials Chemistry, AAY20B Analytical Chemistry and AAY10B Physical Chemistry)
- Doing research related to nanomaterials, energy storage, electrocatalysis, and waste-to-wealth.

Nanyang Technological University of Singapore

Jul 2019 to Jan 2021

Natural Sciences and Science Education

National Institution of Education, Singapore 639798, Singapore

Post-doctoral

- Teaching graduate courses (i.e., MLS923 Separation and Analytical Chemistry and MLS924 Materials Chemistry) and undergraduate courses (i.e., AAY40C Materials Chemistry and AAY20B Analytical Chemistry)
- Doing research related to nanomaterials, energy storage, electrocatalysis, and waste-to-wealth.

Technical University of Munich

Jul 2018 to Aug 2018

Department of Chemistry

Technical University of Munich, 85748 Garching, Munich

Visiting Scholar (for 2 weeks)- Supervisor: Prof Hinrichsen, Kai-Olaf

- Working on collaboration project on computational fluid dynamics and membrane distillation.
(Supervisor Prof Hinrichsen, Kai-Olaf)
- Discussed work on the materials and application system and learnt to do computational fluid dynamics study on fluidic system.

Nanyang Technological University of Singapore

Sep 2017 to Jun 2019

School of Chemical and Biomedical Engineering

Nanyang Technological University, Singapore 637459, Singapore

Research Fellow-Supervisor: Prof Chew Jia Wei

- Synthesis and characterization of two-dimensional (2D) materials for organic solvent nanofiltration

- Characterized 2D nanomaterials with TEM, SEM, AFM, XPS, contact angle, zeta potential and FTIR
- Using dead-end module for separation testing

National University of Singapore

Sep 2016 to Sep 2017

Department of Chemical & Biomolecular Engineering

National University of Singapore, Singapore 117585, Singapore

Research Assistant-Supervisor: Prof Hong Liang

- Synthesis and characterization of two-dimensional materials for water purification
- Characterized 2D nanomaterials with TEM, SEM, AFM, XPS, contact angle, zeta potential and FTIR
- Using dead-end and cross-flow modules for separation testing

Nanyang Technological University of Singapore

Jan 2013 to Feb 2017

School of Materials Science and Engineering

Nanyang Technological University, Singapore 639977, Singapore

PhD Researcher (PhD Program)-Supervisor: Prof Alex Yan Qingyu

- Rational-design of transition metal-based electrocatalysts for high energy storage devices
- Characterized of nanostructures using TEM, SEM, AFM, XRD, XPS, ¹H NMR and ICP-OES
- Worked on application on Li-O₂ batteries, Li-ion batteries, supercapacitors, and water splitting reaction

Nanyang Technological University of Singapore

Jan 2013 to Jul 2016

School of Materials Science and Engineering

Nanyang Technological University, Singapore 639977, Singapore

Teaching Assistant

- Laboratory teaching in materials synthesis and characterization
- Developed projects and guided undergraduate students for their final year project

Agency for Science, Technology and Research

Jun 2012 to Nov 2012

Institute of Materials Research and Engineering

3, Research Link, Singapore 117602

Student Researcher (Final Year Project)-Supervisor: Prof SUBRAMANIAN Tamil Selvan

- Development of multifunctional nanoparticles for bio-imaging and targeted drug delivery applications
- Synthesized nanocrystals that have fluorescence properties such as quantum dots and upconversion nanoparticles
- Used those nanocrystals for cancer cell testing

Agency for Science, Technology and Research

Jun 2006 to Sep 2006

Institute of Chemical and Engineering Sciences

1 Pesek Road, Jurong Island, Singapore 627833

Student Researcher (Industrial Attachment)-Supervisor: Dr Armando Borgna

- Synthesized nano-catalysis and for ethanol reforming and fischer-tropsch processes. Aimed to improve the percentage product conversion at low temperature as to reduce cost in industrial processes
- Characterized the nanomaterials and reaction with TEM, FTIR, BET, XRD, XPS, XRF, GC, HPLC and TPR

3. Education

Nanyang Technological University of Singapore

Jan 2013 to Feb 2017

School of Materials Science and Engineering

Nanyang Technological University, Singapore 639977, Singapore

Doctor of Philosophy of Interdisciplinary Graduate School

- Specialized in Nanomaterial Fabrication for Electrocatalysis and Energy Storage

Nanyang Technological University of Singapore

Aug 2009 to Feb 2013

School of Physical and Mathematical Sciences

Nanyang Technological University, Singapore 637371, Singapore

Degree of Bachelor of Science in Chemistry and Biological Chemistry

- Concentrated in Materials Chemistry and Analytical Chemistry

Temasek Polytechnic

Jul 2004 to Jun 2007

Department of Chemical Engineering

Temasek Polytechnic, Singapore 529757, Singapore

Diploma in Chemical Engineering

- Grade of qualification: cGPA 3.58/4.00

Specialized in Analytical Instrumental Analysis and Current Good Manufacturing Practice

4. Publication list

Total citation 8911; h-index 48; i10-index 116, 156/180 publications in **Q1** journals.

Highest impact factor: 39.714, highest citation: 717. 2 filed TDs. ***corresponding author**.

1. Hao Fu, Jun Yang*, Zhiqiang Wu, He Ren, Jianeng Ji, Chunyan Li, Minjie Shi, & **Edison Huixiang Ang***, "High-entropy Mn-prussian blue analogs enable long-term cycling in aqueous sodium-ion batteries through synergistic redox and ion diffusion enhancements" *Journal of Colloid and Interface Science* (**Q1**) (Impact Factor: 9.37)
2. Alain Rafael Puente Santiago*, Tianwei He*, Md Ariful Ahsan, Mohamed Noufal, **Edison Huixiang Ang***, Jamie Warner*, and Christopher Dares*, "An atomistic view of the dynamic behavior of single atom/nanocluster electrocatalytic active sites" *Energy & Environmental Science* (**Q1**) (Impact Factor: 30.8)
3. Mengdi Hu, Tianyang Cui, Yisha Wang, Yapeng Zheng, Mingtong Zhang, **Edison Huixiang Ang***, & Jixin Zhu*, "Hierarchical MXene hydrogel evaporators with self-regulating water-thermal management for high-efficiency removal of multipollutants via solar-energy utilization" *Small* (**Q1**) (Impact Factor: 12.1)
4. Xiao-Tong Wang, Zhen-Yi Gu, Jun-Ming Cao, Xin-Xin Zhao, Han-Hao Liu, Shuo-Hang Zheng, Yong-Li Heng, Kai-Yang Zhang, **Edison Huixiang Ang**, Zhe Wang, Ronghua Zeng, & Xing-Long Wu*, "Dual-loop upcycling of spent LiFePO₄: defect inheritance enables durable and fast-charging sodium-ion batteries" *National Science Review* (**Q1**) Just Accepted. (Impact Factor: 17.1)
5. Xin Tang, Huiwei Ding, Qiaofeng Han, Guolang Zhou, Rongyao Ma, Zhipeng Xue, Shulei Yan, Lili Zhang*, Jingzhou Yin*, & **Edison Huixiang Ang***, "Electron-deficient B-site engineering in CeNiO₃ for efficient PMS activation and tetracycline degradation" *Materials Horizons* (**Q1**) Just Accepted. (Impact Factor: 13.3)
6. Xinyue Zhang, Haoyuan Qiu, Zhiyong Han, Lei Ke, Mugilan Narayanasamy, Can Cui, Jun Yang*, Minjie Shi, & **Edison Huixiang Ang***, "Molecularly bridged design of electron-delocalized dual redox-active organic electrode for high-efficiency capacitive deionization and water treatment" *Chemical Science* (**Q1**) Just Accepted.

(Impact Factor: 7.4) **2025 Chemical Science HOT Article Collection**

7. Jun Yang, Hao Fu, Lingqian Ye, Minjie Shi, & **Edison Huixiang Ang***, “Tailoring surface structures in Mn-based Prussian blue analogues for enhanced NH_4^+ transport and high-performance aqueous batteries” *Materials Horizons* (**Q1**) Just Accepted. (Impact Factor: 13.3)
8. Xinyue Zhang, Haibing Zhang, Zhimin Jiang, Zhaolei Li, Minjie Shi, **Edison Huixiang Ang***, & Jun Yang*, “Achieving superior anti-corrosion performance with spherical organic additives and synergistic barrier-passivation mechanisms” *Journal of Materials Chemistry A* (**Q1**), Just Accepted. (Impact Factor: 9.5)
9. Liang Guo, Getting Xu, Ning Ding, Yangke Pan, Zheng Xiao, **Edison Huixiang Ang***, Junbin Liao*, & Jiangnan Shen*, “Mitigating scaling in selective electrodialysis for spent lithium battery recovery using bipolar membranes” *Desalination* (**Q1**) Just Accepted. (Impact Factor: 8.4)
10. Ke Rui, Zhilong Zhang, Suxia Yan*, Mustafa Khan, Junfeng Liu, Xiaohui Song, Quan Wang*, **Edison Huixiang Ang***, & Yong Wang*, “Anion-cation synergy of D-pantothenic acid hemicalcium for dendrite-free zinc anodes in aqueous zinc-ion batteries” *Journal of Energy Storage* (**Q1**) Just Accepted. (Impact Factor: 8.9)
11. Mingtong Zhang, Yisha Wang, **Edison Huixiang Ang**, Liu Yang, Yapeng Zheng, Haoteng Sun, Hanqi Zhang, Tianxiang Yang, Yuan Hu, & Jixin Zhu*, “Hydrogel electrolyte with ultrahigh water-locking capability for quasi-solid zinc-ion batteries with extreme environmental safety” *Small Methods* (**Q1**) Just Accepted. (Impact Factor: 10.7)
12. Qing Shen, Jinming Wang, Zhouru He, Wangqin Fu, **Edison Huixiang Ang***, & Junjie Wang*, “Heteranionic halogenated TiBTx MBene protective layer with dual-functional zincophilic and hydrophobic characteristics for dendrite-free zinc anode” *Angewandte Chemie International Edition* (**Q1**) Just Accepted. (Impact Factor: 16.6)
13. Guangyuan Chen, Chenyang Lin, Fangchong Han, Haotian Zhang, Shijian Zhou, Fu Yang, Yan Kong*, and **Edison Huixiang Ang***, “Recent advances in photocatalytic H_2O_2 production: modification strategies of 2D materials and in situ application of H_2O_2 ” *Materials Horizons* (**Q1**) Just Accepted. (Impact Factor: 13.3)
14. Jianbo Dong, Guolang Zhou, Wenhao Ding, Jiayi Ji, Qing Wang, Tiansha Wang, Lili Zhang, Xiuyang Zou*, Jingzhou Yin*, & **Edison Huixiang Ang***, “Machine learning-assisted benign transformation of three zinc states in zinc ion batteries” *Energy & Environmental Science* (**Q1**) Just Accepted. (Impact Factor: 32.4)
15. Yeyang Li, Zhipeng Xu, Wenhui Shi, Meng Wang, Zhihao Lin, Daohui He, Yangke Pan, Junbin Liao*, **Edison Huixiang Ang***, & Jiangnan Shen* “Branched poly(terphenyl trifluoroacetophenone piperidone) membranes with dual-proton conductor assist for enhancing fuel cell performance operation in high-temperature” *Journal of Membrane Science* (**Q1**), 2025, 727, 124127 (Impact Factor: 8.4)
16. Yazhen Jiang, Tong Mu, Ning Ding, Yangke Pan, Getting Xu, Junbin Liao*, **Edison Huixiang Ang***, & Jiangnan Shen* “Poly(aryl piperidine) anion exchange membrane with self-assembled siloxane crosslinked networks for efficient ion separation in alkaline waste treatment via electrodialysis” *Desalination* (**Q1**), 2025, 608, 118853 (Impact Factor: 8.4)
17. Leicheng Guo, Meng Wang, Wenhui Shi, Zhipeng Xu, Junbing Liao, Zhishan Chen, Jianquan Weng*, **Edison Huixiang Ang***, & Jiangnan Shen*, “Durable crosslinked poly(arylene piperidinium)-based anion exchange membranes for alkaline electrodesalination” *Separation and Purification Technology* (**Q1**), 2025 (Just Accepted) (Impact Factor: 8.2)
18. Tianxiang Yang, Yisha Wang, Liu Yang, Hanqi Zhang, Mingtong Zhang, **Edison**

- Huixiang Ang***, & Jixin Zhu*, “Dynamic engineering of lithiation reactions in silicon oxide with interface regulation for enhanced safety in lithium-ion batteries” Chemical Engineering Journal (**Q1**), 2025 (Just Accepted) (Impact Factor: 13.4)
19. Yujie Cui, Jun Yang*, Houxiang Wang, Yueheng Tao, Peipei Zhang, Guangxing Li, Minjie Shi*, & **Edison Huixiang Ang***, “Unleashing high-efficiency proton storage: innovative design of ladder-type organic molecules” Carbon Energy (**Q1**), 2025 (Just Accepted) (Impact Factor: 21.29)
 20. Miao Li, Chenxu Guo, Xingzhong Yuan*, Zhiyan Feng, Chencheng Qin, Aoqiang Shu, **Edison Huixiang Ang**, Yan Wu*, & Hou Wang*, “Ultralow-peroxy monosulfate-initiated dissolved oxygen activation for micropollutant decomposition by an asymmetric single-site metal (Fe-N₂O₁S₁) catalyst” Applied Catalysis B: Environment and Energy (**Q1**), 2025, 370, 125175 (Impact Factor: 20.2)
 21. Tingyan Ren, Xianqi Wu, Dezhao Wang, Xiaochun Ma, Bin Cai, Febri Baskoro, Bolin Zou, Juyeong Kim, Binghui Ge, Qiaobao Zhang, Afriyanti Sumboja, Xiaohui Song* & **Edison Huixiang Ang***, “Sustainable recovery progress of ternary cathodes in lithium-ion batteries in the artificial intelligence era” Materials Today Energy (**Q1**), 2025 (Just Accepted) (Impact Factor: 9.0)
 22. Jiabin Wu, Chencheng Qin, Miao Li, Qian Peng, Xiaoli Guo, Zifang Li, Xingzhong Yuan, **Edison Huixiang Ang**, Meng Sun, & Hou Wang*, “Electric cavity-enhanced catalytic membranes for micropollutant removal in wastewater” Journal of Membrane Science (**Q1**), 2025, 721, 123823 (Impact Factor: 8.4)
 23. Hao Fu, Xianpeng Wang, Lingqian Ye, Zhiqiang Wu, Jun Yang*, Minjie Shi, **Edison Huixiang Ang*** “Optimizing Fe in Mn-based Prussian blue analogs with dual redox-active sites to enhance operating voltage and durability in Zn-ion batteries” Chemical Engineering Journal (**Q1**), 2025, 506, 160308 (Impact Factor: 13.4)
 24. Yisha Wang, Feng Xu, **Edison Huixiang Ang**, Liu Yang, Tianyang Cui, Haoteng Sun, Mingtong Zhang, Tianxiang Yang, Hanqi Zhang, Jixin Zhu*, & Yuan Hu, “Chemically Patterning lithiophilic interphase to harmonize spatial electrons and thermal catalysis dynamics for safe lithium metal batteries” Angewandte Chemie International Edition (**Q1**), 2025, e202500323 (Impact Factor: 16.6)
 25. Hou Wang*, Miao Li, Zhiyan Feng, Xingzhong Yuan, Chenxu Guo, Chencheng Qin, Zihan Shu, Zhiyan Guo, **Edison Huixiang Ang**, Wenwei Li, & Yan Wu, “Innovative asymmetric CoSA-N-Ti₃C₂T_x catalysis: unleashing superoxide radicals for rapid self-coupling removal of phenolic pollutant” Angewandte Chemie International Edition (**Q1**), 2025, e202502307 (Impact Factor: 16.6)
 26. Yifang Zhang, Hongyao Zhao, Jiayi Zhou, Yanyun Wang, Yangping Zhang, Jialing Shen, Danhong Shang, Feng Zeng, Jiaming Pan, Yiyang Song, Fu Yang* & **Edison Huixiang Ang***, “Photothermal halloysite nanotube hybrids with CoO/carbon layers for enhanced pollutant degradation and solar-powered water purification” Desalination (**Q1**), 2025, 602, 118630 (Impact Factor: 8.4)
 27. Yuxuan Wei, Lingling Xu, Kefan Shi, Hanwen Gong, Jiaming Hu, Xianghao Zhang, Meilan Pan*, & **Edison Huixiang Ang***, “Mechanistic insights into the hydrogel-supported catalyst for superior oxygen evolution performance” Chemical Engineering Journal (**Q1**), 2025, 506, 160021 (Impact Factor: 13.4)
 28. Kefan Shi, Marliyan Aizudin, Meilan Pan*, & **Edison Huixiang Ang***, “Ultimate water capillary evaporation in bamboo-inspired evaporator” Materials Horizons (**Q1**), 2025 (Just Accepted) (Impact Factor: 13.3)
 29. Hao Qian, Yanqing Xu, Chenfei Lin, Getting Xu, Tong Mu, **Edison Huixiang Ang**, Shanshan Yang*, Junbin Liao*, & Jiangnan Shen*, “Unidirectional diffusion synthesis of stabilized triphenylamine-based organic frameworks (COFs) composite

- membranes for dye separation” Separation and Purification Technology (Q1), 2025, 362, 131753 (Impact Factor: 8.2)
30. Yujie Cui, Yueheng Tao, Jun Yang*, Houxiang Wang, Peipei Zhang, Guangxing Li, Minjie Shi*, & **Edison Huixiang Ang***, “A ladder-type organic molecule with pseudocapacitive properties enabling superior electrochemical desalination” Materials Horizons (Q1), 2025 (Just Accepted) (Impact Factor: 13.3)
 31. Yijie Zhang, Jichang Sun, Liansheng Li, Zuxin Long, Pengyu Meng, **Edison Huixiang Ang***, & Qinghua Liang*, “Advancements in the emerging rare-earth halide solid electrolytes for next-generation all-solid-state lithium batteries” Coordination Chemistry Reviews (Q1), 2025, 528, 216432 (Impact Factor: 20.3)
 32. Huimin Ruan, Zhihao Lin, Shangshang Gao, Junbin Liao*, Arcadio Sotto, Yuyang Yao, Zhipeng Xu, Jiangnan Shen*, & **Edison Huixiang Ang***, “Grafting bis-siloxane anion-exchange membranes: investigating sulfuric acid concentration and solvent resistance” Journal of Membrane Science (Q1), 2025, 718, 123684 (Impact Factor: 8.4)
 33. Qing Wang, Zehua Wu, Jiahao Shen, Lin Li, Fujian Lv, Yangyang Pan, Jingzhou Yin*, Chunjiao Lv, **Edison Huixiang Ang***, “Magnetically separable Zn₂FeOx@CN microcubes derived from metal-organic frameworks for efficient tetracycline removal” Surfaces and Interfaces (Q1), 2025, 56, 105698 (Impact Factor: 5.7)
 34. Huimin Ruan, Hao Lu, Jikuan Wang, Jiayun Shi, Zhibo Zhang, Junbin Liao, **Edison Huixiang Ang***, & Jiangnan Shen*, “Transforming waste into value: efficient recycling of KCl and NH₄F via electrodialysis metathesis” Desalination (Q1), 2025, 600, 118424 (Impact Factor: 8.4)
 35. Guoqing Li, Hailing Ma, Yao Tong*, Hongxu Wang, Yang Luo, **Edison Huixiang Ang***, Sivasambu Bohm, Ahmed A. Ibrahim, & Ahmad Umar, “Research progress on carbon-based anode materials for sodium-ion batteries” Journal of Energy Storage (Q1), 2025, 107, 114977 (Impact Factor: 9.64)
 36. Jianwei Yuan, Su Li, Zhaofei Dang, Sixia Liu, Fu Yang, Dongguang Wang, Hengcong Tao*, Shuying Gao*, and **Edison Huixiang Ang***, “Harnessing Janus structures: enhanced internal electric fields in C₃N₅ for improved H₂ photocatalysis” Materials Horizons (Q1), 2025, 12, 1346-1354 (Impact Factor: 13.3)
 37. Rongyao Ma, Jianhua Song, Huiwei Ding, Qiaofeng Han, Xin Tang, Fujian Lv*, Shizheng Wen, Jingzhou Yin*, & **Edison Huixiang Ang***, “Decoding the entropy-stabilized matrix of high-entropy layered double hydroxides: harnessing strain dynamics for peroxymonosulfate activation and tetracycline degradation” Journal of Colloid and Interface Science (Q1), 2025, 680, 676-688 (Impact Factor: 9.4)
 38. Ying Chen, Suxia Yan, Taofeng Li, Zhilong Zhang, Li Zhang, Xiaohui Song, Junfeng Liu*, Yong Wang*, & **Edison Huixiang Ang***, “Self-assembled zinc polyethylenimine shield for long-lasting zinc anodes” Journal of Power Sources (Q1), 2025, 627, 235799 (Impact Factor: 8.1)
 39. Yu Guan, Guolang Zhou, Yexin Jiang, Junyuan Dong, Lin Li, Jingzhou Yin*, Suyun Huang, Lili Zhang, & **Edison Huixiang Ang***, “Lattice distortion effects in high-entropy oxides: boosting PMS activation for effective and durable pollutant degradation” Separation and Purification Technology (Q1), 2025, 358, 130267 (Impact Factor: 8.6)
 40. Kwame Nana Opoku, Yidan Wei, Clara Afia Amoah Dankwa, Ruiting Ni, Zhenxiao Wang, Linzhi Zhai, Jiangguang Zhang, **Edison Huixiang Ang***, & Fu Yang*, “Advances in photothermal water evaporation: synthesis, mechanisms, and coupled techniques” Energy Materials (Q1), 2025, 5, 500020 (Impact Factor: 11.8)

41. Yuyang Yao, Yueyue Lu, Jingwen Xu, Liang Guo, Heda Ding, Yitao Chen, Yuna Shi, Junbin Liao, **Edison Huixiang Ang***, Zhenlu Shen*, & Jiangnan Shen*, “Enhancing anti-biofouling activity in electrodialysis by spraying GO@Ag nanosheets on anion exchange membranes” Separation and Purification Technology (**Q1**), 2025, 353, 128611 (Impact Factor: 8.6)
42. Fu Yang*, Shi-Qi Yang, Xiu Zhong, Hong-Yao Zhao, Meng-Ting Liu, Yan-Yun Wang, Chao Yu, Xin-Wei Zhou, Dan-Hong Shang, Qian Wang*, Yi-Yan Song*, & **Edison Huixiang Ang***, “Enabling highly concentrated tetracycline degradation with tailored FeCo nanocrystals in porous graphitic carbon fiber” Rare Metals (**Q1**), 2024, (Just Accepted) (Impact Factor: 9.6)
43. Xiaocui Lai, Wenkai Cao, Ganggang Zhang, **Edison Huixiang Ang**, Liu Su, Cong Liu, Weihua He, Waihua Lai*, & Shengliang Deng*, “Traffic signal-inspired fluorescence lateral flow immunoassay utilizing self-assembled AIENP@Ni/EC for simultaneous multi-pesticide residue detection” Chemical Engineering Journal (**Q1**), 2024, 501, 157565 (Impact Factor: 13.3)
44. Yuyang Yao, Junjie Mu, Yueyue Lu, **Edison Huixiang Ang***, & Jiangnan Shen*, “Unlocking electrodialysis efficiency with spacer mesh geometry and material conductivity via finite element analysis” AIChE Journal, 2024, 71/2, e18653 (Impact Factor: 3.5)
45. Chencheng Qin, Xiaodong Wu, Wenyan Zhou, Miao Li, Shuai Bi, Lin Tang, Hao Huang, Wenguang Tu, Xingzhong Yuan, **Edison Huixiang Ang**, Weiling Sun, Long Chen, Zhaoli Liu, Bing He, Lai Lyu, Yan Wu, Wen Liu, & Hou Wang*, “Urea/thiourea imine linkages provide accessible holes in flexible covalent organic frameworks and dominates self-adaptivity and exciton dissociation” Angewandte Chemie International Edition (**Q1**), 2024, 64/7, e202418830 (Impact Factor: 16.6)
46. Zi-Hang Xue, Hao-Jie Liang, Yong-Li Heng, Jia-Lin Yang, **Edison Huixiang Ang**, Hong-Yan Lu, Hong Yu, Dongmei Dai, Dai-Huo Liu, Chuan-Yu Zheng, Wei Guo & Xing-Long Wu*, “Anion-induced electrolyte chemistry enables high energy density primary battery for ultralow-temperature conditions” Science China Chemistry (**Q1**), 2024. (Impact Factor: 10.4)
47. Xiaocui Lai, Shijin Huang, Ganggang Zhang*, **Edison Huixiang Ang**, Hongxin Yuan, Liu Su, Cong Liu, Shengliang Deng*, Weihua Lai*, “Efficient green synthesis of biocompatible MPN fluorescent microspheres via hydrophobic-force-driven strategy for enhanced immunochromatographic assays” Journal of Hazardous Materials (**Q1**), 2024, 480, 136390 (Impact Factor: 12.2)
48. Wenyan Zhou, Chencheng Qin, Aoqiang Shu, Limei Shi, Ke Li, Bo-Tao Zhang, **Edison Huixiang Ang**, & Hou Wang*, “Advances in single-crystal framework materials: design, synthesis, and applications” Results in Engineering (**Q1**), 2024, 24, 103076 (Impact Factor: 6.0)
49. Yundi Dong, Yangbo Qiu, Haili Wei, Chunhong Liu, Ke Wu, Junbin Liao*, **Edison Huixiang Ang**, & Jiangnan Shen*, “Advanced membrane contactor coupled with electrodialysis metathesis for efficient carbon dioxide capture and waste salt remediation” Desalination (**Q1**), 2024, 592, 118111 (Impact Factor: 11.211)
50. Xiaohui Song*, Rui Huang, Xingyu Zhang*, Qiang Chang, Semi Kim, Daeun Jeong, Qian Hou, Juyeong Kim, **Edison Huixiang Ang**, Xiaowei Su, Xuyong Feng, & Hongfa Xiang*, “Unveiling the dynamic pathways of metal-organic framework crystallization and nanoparticle incorporation for Li-S batteries” Advanced Science (**Q1**), 2024, 11/43, 2407984 (Impact Factor: 17.52)
51. Ziyi Huang, Xinjie Shen, Yuxuan Wei, Jia Wei Chew, **Edison Huixiang Ang***, Meilan Pan*, “A novel approach to chiral separation: thermal-sensitive hydrogel

- membranes” *Materials Horizons* (**Q1**), 2024, 11, 6098-6106 (Impact Factor: 13.3)
52. Tianyang Cui, **Edison Huixiang Ang**, Yapeng Zheng, Wei Cai, Jingwen Wang, Yuan Hu*, and Jixin Zhu*, “Ultrahigh transparent safety film for spectrally selective photo/electro-thermal conversion via surface-enhanced plasma resonance dynamics” *Nano letters* (**Q1**), 2024, 24/38, 11904-11912 (Impact Factor: 9.6)
 53. Wangqin Fu, Marliyana Aizudin, Pooi See Lee*, and **Edison Huixiang Ang***, “Recent Progress in the Applications of MXene-based Materials in Multivalent Ion Batteries” *Small* (**Q1**), 2024, 20/47, 2404093 (Impact Factor: 15.153)
 54. Zhilong Zhang, Suxia Yan, Hongyu Dong, Taofeng Li, Junfeng Liu, Xiaohui Song, **Edison Huixiang Ang***, Quan Wang*, and Yong Wang*, “Investigating the role of non-ionic surfactants as electrolyte additives for improved zinc anode performance in aqueous batteries” *Journal of Colloid and Interface Science* (**Q1**), 2024, 677, 885-894 (Impact Factor: 9.4)
 55. Hongyao Zhao, Danhong Shang, Haodong Li, Marliyana Aizudin, Hongyang Zhu, Xiu Zhong, Yang Liu, Zhenxiao Wang, Ruiting Ni, Yanyun Wang, Sheng Tang, **Edison Huixiang Ang***, and Fu Yang*, “Monolith floatable dual-function solar photothermal evaporator: efficient cleanwater regeneration synergizing with pollutant degradation” *Materials Horizons* (**Q1**), 2024, 11, 5081-5093 (Impact Factor: 13.3)
 56. Satyajit Ratha* and **Edison Huixiang Ang***, “Horizons Community Board Collection: setting new trends in energy storage and harvesting through innovative approaches” *Materials Horizons* (**Q1**), 2024, 11, 3718-3720 (Impact Factor: 13.3)
 57. Yuyang Yao, Yueyue Lu, Jingwen Xu, Jiacheng Yu, Liang Guo, Heda Ding, Jian Li, Junbin Liao, **Edison Huixiang Ang***, Zhenlu Shen*, and Jiangnan Shen*, “Rational regulation of post-electrodialysis electrochromic anion exchange membranes via TiO₂@Ag synergistically strengthens visible-light photocatalytic anti-contamination activity” *Water Research* (**Q1**), 2024, 263, 122178 (Impact Factor: 11.4)
 58. Xiaocui Lai, Ganggang Zhang, Gan Zhang, Liu Su, Cong Liu, Weihua He, **Edison Huixiang Ang***, Weihua Lai*, & Shengliang Deng*, “Polydopamine-modulated anisotropic co-growth plasmonic blackbody for efficient ultra-broad-spectrum quenching to establish multicolor fluorescent immunoassay” *Chemical Engineering Journal* (**Q1**), 2024, 495, 153083 (Impact Factor: 15.1)
 59. Dahai Yang, Rui Huang, Bolin Zou, Ruoxu Wang, Yong Wang, **Edison Huixiang Ang***, & Xiaohui Song*, “Unraveling nanosprings: morphology control and mechanical characterization” *Materials Horizons* (**Q1**), 2024, 11, 3500-3527 (Impact Factor: 13.3)
 60. Chun Chen, Liansheng Li, Zuxin Long, **Edison Huixiang Ang***, & Qinghua Liang*, “Enabling stable aqueous Zn metal anodes by scandium acetate electrolyte additives” *Journal of Materials Chemistry A* (**Q1**), 2024, 12, 18968-18976 (Impact Factor: 11.9)
 61. Junbin Liao, Tongtong Wang, Yifan Xu, Qishun Zhang, Yuanyuan Tang, Junjie Mu, **Edison Huixiang Ang**, Yuyang Yao, Yanqing Xu*, Jiangnan Shen*, “Bifunctional side-chains decorating a distorted poly(aryl ether sulfone) backbone to endow an anion exchange membrane with high perm-selectivity for chloride ions” *Journal of Membrane Science* (**Q1**), 2024, 706, 122970 (Impact Factor: 9.5)
 62. Taofeng Li, Suxia Yan*, Hongyu Dong, Yang Zheng, Kun Ming, Ying Chen, Haitao Li, Guochun Li, Zhixia He, Weimin Li, Quan Wang, Xiaohui Song, Junfeng Liu*, **Edison Huixiang Ang***, & Yong Wang*, “Engineering hydrophobic protective layers on zinc anodes for enhanced performance in aqueous zinc-ion batteries” *Journal of Energy Chemistry* (**Q1**), 2024, 97, 1-11 (Impact Factor: 13.1)
 63. Liang Guo, Yuyang Yao, Jingwen Xu, **Edison Huixiang Ang**, Getting Xu, Junbin

- Liao*, Arcadio Sotto, Jiangnan Shen*, “Strategies for lithium extraction from salt lakes by nanofiltration and selective-electrodialysis and analysis of differences between the two methods” *Desalination (Q1)*, 2024, 586, 117749 (Impact Factor: 11.211)
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139. Dao-Sheng Liu, Yinglin Mai, Shufeng Chen, Sucheng Liu, Edison Huixiang Ang, Minghui Ye, Yang Yang, Yufei Zhang, Hongbo Geng, Cheng Chao Li* “A 1D-3D interconnected δ -MnO₂ nanowires network as high-performance and high energy efficiency cathode material for aqueous zinc-ion batteries” Electrochimica Acta, (Just Accepted). (**Impact Factor: 6.215**)
140. Haoliang Chen, Siling Cheng, Dong Chen, Yu Jiang, Edison Huixiang Ang, Weiling Liu, Yuezhao Feng, Xiangong Rui*, and Yan Yu* “Vanadate-based electrodes for rechargeable batteries” Materials Chemistry Frontiers, (Just Accepted). (**Impact Factor: 6.788**)
141. Pengfei Zhang, Yaoda Liu, Tingting Liang, Edison Huixiang Ang, Xu Zhang, Fei Ma*, Zhengfei Dai* “Nitrogen-doped carbon wrapped Co-Mo₂C dual mott-schottky nanosheets with large porosity for efficient water electrolysis” Applied Catalysis B- Environmental (Just Accepted) (**Impact Factor: 14.47**)
142. Yufei Zhang, Edison Huixiang Ang, Yang Yang, Minghui Ye, Wencheng Du, Chengchao Li* “Interlayer chemistry of layered electrode materials in energy storage devices” Advanced Functional Materials (Just Accepted) (**Impact Factor: 16.836**)
143. Dan Yang, Dong Chen, Yu Jiang, Edison Huixiang Ang, Yuezhao Feng, Xianhong Rui*, Yan Yu* “Carbon-based materials for all-solid-state zinc-air batteries” Carbon Energy (Just Accepted) (**Impact Factor: NA**). Top Cited Article 2021-2022
144. Yufei Lu, Hongjian Zhang, Edison Huixiang Ang, Zhentao Nie, Haodong Liu, Yuhang Du, Congying Han, Jixin Zhu* and Wei Huang* “In-situ self-catalyzed growth of bimetallic nanoparticles/carbon nanotubes: a flexible binder-free electrocatalyst for high-performance oxygen evolution reaction” Materials Today Physics, (Just Accepted) (**Impact Factor: 10.443**)
145. Yao Zhang, Edison Huixiang Ang (co-1st author), Khang Ngoc Dinh, Kun Rui, Huijuan Lin, Jixin Zhu* and Qingyu Yan* “Recent advances in vanadium-based cathode materials for rechargeable zinc-ion batteries” Materials Chemistry Frontiers, 06/10/2020. (**Impact Factor: 6.788**)
146. Wencheng Du, Edison Huixiang Ang, Yang Yang, Yufei Zhang, Minghui Ye and Chengchao Li* “Challenges in material and structure design of zinc anode toward high-performance aqueous zinc-ion batteries” Energy & Environmental Science, 07/09/2020. (**Impact Factor: 33.250**)
147. Wenjin Yang, Dong Chen, Maozhu Zeng, Yuqi She, Xuliang Lin, Edison Huixiang Ang, Chunshuang Yan, Yanlin Qin* and Xianhong Rui* “Rational design

- of vanadium chalcogenides for sodium-ion batteries” Journal of Power Sources, 05/09/2020. **(Impact Factor: 8.247)**
148. Licheng Wei, **Edison Huixiang**, Yang Yang, Yanlin Qin*, Yufei Zhang*, Minghui Ye, Qi Liu and Cheng Chao Li* “Recent advances of transition metal based bifunctional electrocatalysts for rechargeable zinc-air batteries” Journal of Power Sources, 19/08/2020. **(Impact Factor: 8.247)**
 149. Fu Yang*, Liu Zhou, Shuying Gao, Xuyu Wang, Jin Chen*, Aihua Yuan, and **Edison Huixiang Ang*** “Combining two active states of FeO_x in-situ in molecular sieve to deliver enhanced catalytic activity via creating special configuration and synergy” Journal of Alloys and Compounds, 30/6/2020. **(Impact Factor: 4.65)**
 150. Bo Wang, **Edison Huixiang Ang**, Yang Yang, Yufei Zhang, Minghui Ye, Qi Liu and Cheng Chao Li* “Post-Lithium Ion Battery Era: Recent Advances in Rechargeable Potassium-Ion Batteries” Chemistry - A European Journal, 8/6/2020. **(Impact Factor: 4.857)**
 151. Bo Wang, **Edison Huixiang Ang**, Yang Yang, Yufei Zhang, Hongbo Geng, Minghui Ye, and Cheng Chao Li* “Interlayer engineering of molybdenum trioxide towards high-capacity and stable sodium ion half/full batteries” Advanced Functional Materials, 27/5/2020. **(Impact Factor: 16.836)**
 152. **Edison Ang Huixiang***, Jialiu Zeng, Gomathy Sandhya Subramanian, Vijila Chellappan, Thankiah Sudhaharan, Parasuraman Padmanabhan, Balázs Zoltán Gulyás, and Subramanian Tamil Selvan* “Silica-Coated Mn-Doped ZnS Nanocrystals for Cancer Theranostics” ACS Applied Nano Materials, 6/3/2020. **(Impact Factor: TBA)**
 153. Wencheng Du, Jinfei Xiao, Hongbo Geng, Yang Yang, Yufei Zhang, **Edison Huixiang Ang**, Minghui Ye and Cheng Chao Li* “Rational-design of polyaniline cathode using proton doping strategy by graphene oxide for enhanced aqueous zinc-ion batteries” Journal of Power Sources, 29/2/2020. **(Impact Factor: 8.247)**
 154. **Edison Ang Huixiang***, Sadiye Velioglu, Chew Jia Wei* “Tunable affinity separation enables ultrafast solvent permeation through layered double hydroxide membranes” Journal of Membrane Science, 1/12/2019. **(Impact Factor: 7.183)**
 155. **Edison Huixiang Ang***, Jia Wei Chew* “Two-dimensional transition-metal dichalcogenides-based membrane for ultrafast solvent permeation” Chemistry of Materials, 22/11/2019. **(Impact Factor: 9.567)**
 156. Liyan Wang, Sheng-qi Guo*, Yantao Chen, Meilan Pan, **Edison Huixiang Ang**, Zhi-hao Yuana* “A Mechanism Investigation of how the Alloying Effect Improves the Photocatalytic Nitrate Reduction Activity of Bismuth Oxyhalide Nanosheets” ChemPhotoChem, 20/9/2019. **(Impact Factor: 3.077)**
 157. **Edison Huixiang Ang**, Khang Ngoc Dinh, Xiaoli Sun, Ying Huang, Jun Yang, Zhili Dong, Xiaochen Dong, Wei Huang, Zhiguo Wang, Hua Zhang,* and Qingyu Yan* “Highly efficient and stable hydrogen production in all pH range by two-dimensional structured metal-doped tungsten semicarbides” Science Partner Journal, 2/5/2019. **(Impact Factor: 11.036)**
 158. Yingying Cao, Kaiming Geng, Hongbo Geng, **Huixiang Ang**, Jie Pei, Yayuan Liu, Xueqin Cao, Junwei Zheng, and Hongwei Gu “Metal-Oleate complex-Derived Bimetallic Oxides Nanoparticles Encapsulated in 3D Graphene Networks as Anodes for Efficient Lithium Storage with Pseudocapacitance” Nano-Micro Letters, 1/3/2019. **(Impact Factor: 12.264)**
 159. Yong Zen Tan, **Edison Ang Huixiang*** and Chew Jia Wei* “Metallic spacer for membrane distillation” Journal of Membrane Science, 15/2/2019. **(Impact Factor: 7.183)**

160. Yingying Cao, Yidong Lu, Edison Huixiang Ang, Hongbo Geng,* Xueqin Cao,* Junwei Zheng and Hongwei Gu* “MOFs derived uniform Ni nanoparticles encapsulated in carbon nanotubes grafted on rGO nanosheet as bifunctional materials for lithium-ion batteries and hydrogen evolution reaction” *Nanoscale* 18/7/2019. **(Impact Factor: 7.790)**
161. Edison Ang Huixiang*, Yong Zen Tan and Chew Jia Wei* “3D plasmonic spacer enables highly efficient solar-enhanced membrane distillation of seawater” *Journal of Materials Chemistry A*, 28/3/2019. **(Impact Factor: 14.511)**
162. Yayuan Liu, Hongbo Geng*, Edison Huixiang Ang, Xueqin Cao, Junwei Zheng, Hongwei Gu* “Hierarchical Nanotubes Constructed by Co₉S₈/MoS₂ Ultrathin Nanosheets Wrapped with Reduced Graphene Oxide for Advanced Lithium Storage” *Chemistry–An Asian Journal*, 10/12/2018. **(Impact Factor: 3.690)**
163. Jie Pei, Hongbo Geng*, Edison Huixiang Ang, Lingling Zhang, Huaixin Wei, Xueqin Cao, Junwei Zheng, and Hongwei Gu* “Controlled synthesis of hollow C@TiO₂@MoS₂ hierarchical nanospheres for high-performance lithium-ion batteries” *Nanoscale*, 20/8/2018. **(Impact Factor: 7.790)**
164. Hou Wang, Yan Wu, Mingbao Feng, Wenguang Tu, Tong Xiao, Ting Xiong, Huixiang Ang, Xingzhong Yuan, and Jia Wei* “Visible-light-driven removal of tetracycline antibiotics and reclamation of hydrogen energy from natural water matrices and wastewater by polymeric carbon nitride foam” *Water Research*, 21/7/2018. **(Impact Factor: 9.130)**
165. Jie Pei, Hongbo Geng, Huixiang Ang, Lingling Zhang, Huaixin Wei, Xueqin Cao, JunWei Zheng, and Hongwei Gu* “Three-dimensional nitrogen and sulfur co-doped holey-reduced graphene oxide frameworks anchored with MoO₂ nanodots for advanced rechargeable lithium-ion batteries” *Nanotechnology*, 26/4/2018. **(Impact Factor: 3.551)**
166. Huixiang Ang and Liang Hong* “Engineering Defects into Nickel-Based Nanosheets for Enhanced Water Permeability” *Journal of Materials Chemistry A*, 13/9/2017. **(Impact Factor: 14.511)**
167. Huixiang Ang and Liang Hong* “Polycationic Polymer-Regulated Assembling of 2D MOF Nanosheets for High-Performance Nanofiltration” *ACS Applied Materials & Interfaces*, 28/7/2017 **(Impact Factor: 8.758)**
168. Yan Lu, Huixiang Ang (co-1st author), Qingyu Yan,* and Eileen Fong* “Bio-inspired synthesis of hierarchically porous MoO₂/Mo₂C nanocrystals decorated N-doped carbon foam for lithium-oxygen batteries” *Chemistry of Materials*. 23/8/2016. **(Impact Factor: 9.567)**
169. Huixiang Ang, Michel Bosman, Ramesh Thamankar, Muhammad Faizal B. Zulkifli, Swee Kuan Yen, Anushya Hariharan, Thankiah Sudhaharan,* and Subramanian Tamil Selvan* “Highly Luminescent Heterostructured Copper-Doped Zinc Sulfide Nanocrystals for Application in Cancer Cell Labeling” *ChemPhysChem*, 18/8/2016. **(Impact Factor: 3.020)**
170. Huixiang Ang, Huanwen Wang, Bing Li, Yun Zong, Xuefeng Wang, Qingyu Yan* “3D Hierarchical Porous Mo₂C for Efficient Hydrogen Evolution” *Small*, 14/4/2016. **(Impact Factor: 11.459)**
171. Huanwen Wang, Yu Zhang, Huixiang Ang, Yongqi Zhang, Hui Teng Tan, Yufei Zhang, Yuanyuan Guo, Joseph B. Franklin, Xing Long Wu, Madhavi Srinivasan*, Hong Jin Fan* and Qingyu Yan* “A High-Energy Lithium-Ion Capacitor by Integration of a 3D Interconnected Titanium Carbide Nanoparticle Chain Anode with a Pyridine-Derived Porous Nitrogen-Doped Carbon Cathode” *Advanced Functional Materials*, 3/3/2016. **(Impact Factor: 16.836)**

172. Hongbo Geng, **Huixiang Ang**, Xianguang Ding, Huiteng Tan, Guile Guo, Genlong Qu, Yonggang Yang, Junwei Zheng, Qingyu Yan* and Hongwei Gu* “Metal coordination polymer derived mesoporous Co_3O_4 nanorods with uniform TiO_2 coating as advanced anodes for lithium ion batteries” *Nanoscale*, 5/1/2016. **(Impact Factor: 7.790)**
173. Guilue Guo, Xin Yao, **Huixiang Ang**, Huiteng Tan, Yu Zhang, Yuanyuan Guo, Eileen Fong*, and Qingyu Yan* “Using Elastin Protein to Develop Highly Efficient Lithium- O_2 Battery Cathodes”, *Nanotechnology*, 11/12/2015, **(Impact Factor 3.551)**.
174. **Huixiang Ang**, Hui Teng Tan, Zhi Min Luo, Yu Zhang, Yuan Yuan Guo, Guilue Guo, Hua Zhang, and Qingyu Yan* “Hydrophilic Nitrogen and Sulfur Co-doped Molybdenum Carbide Nanosheets for Electrochemical Hydrogen Evolution” *Small*, 3/11/2015. **(Impact Factor: 11.459)**
175. **Huixiang Ang**, Wenyu Zhang, Hui Teng Tan, Hongyu Chen, Qingyu Yan* “Copper oxide supported on platinum nanosheets array: High performance carbon-free cathode for lithium-oxygen cells” *Journal of Power Sources*, 30/10/2015. **(Impact Factor: 8.247)**
176. Guilue Guo, Thi Hong Anh Truong, Huiteng Tan, **Huixiang Ang**, Wenyu Zhang, Chen Xu, Xianghong Rui, Zhaolong Hu, Eileen Fong,* and Qingyu Yan* “Platinum and Palladium Nanotubes Based on Genetically Engineered Elastin–Mimetic Fusion Protein-Fiber Templates: Synthesis and Application in Lithium- O_2 Batteries” *Chemistry An Asian Journal*, 24/6/2014. **(Impact Factor: 3.690)**
177. Wenyu Zhang, Jixin Zhu, **Huixiang Ang**, Haibo Wang, Huiteng Tan, Dan Yang, Chen Xu, Ni Xiao, Bing Li, Wei Ling Liu, Xin Wang, Huey Hoon Hng, and Qingyu Yan* “Fe-based metallopolymer nanowallbased composites for Li- O_2 battery cathode” *ACS Applied Materials & Interfaces*, 28/5/2014. **(Impact Factor: 8.758)**
178. Cheng Chao Li, Wenyu Zhang, **Huixiang Ang**, Hong Yu, Bao Yu Xia, Xin, Wang, Yan Hui Yang, Yang Zhao, Huey Hoon Hng and Qingyu Yan* “Compressed hydrogen gas-induced synthesis of Au-Pt core/shell nanoparticle chains towards high performance catalysts for Li- O_2 batteries” *Journal of Materials Chemistry A*, 8/5/2014. **(Impact Factor: 14.511)**
179. Chen Xu, Shengjie Peng, Chaoliang Tan, **Huixiang Ang**, Huiteng Tan, Hua Zhang and Qingyu Yan* “Ultrathin S-doped MoSe_2 nanosheets for efficient hydrogen evolution” *Journal of Material Chemistry A*, 11/2/2014. **(Citation: 254; Impact Factor: 14.511)**
180. Wenyu Zhang, Jixin Zhu, **Huixiang Ang**, Yi Zeng, Ni Xiao, Yiben Gao, Weiling Liu, Huey Hoon Hng and Qingyu Yan* “Binder-free graphene foams for O_2 electrodes of Li- O_2 batteries” *Nanoscale*, 1/8/2013. **(Impact Factor: 7.790)**

5. Book Chapters

1. Book Title: [Electrochemical Energy Storage Technologies Beyond Li-ion Batteries](#) (1st Edition), 2025, Elsevier, Paperback ISBN: 9780443155147, eBook ISBN: 9780443155154. Edited by Guanjie He. Book Chapter: Lithium-air batteries. Authors: Edison Huixiang Ang, Vaiyapuri Soundharajan, Subramanian Nithiananth, Anindityo Arif iadi, Marliyana Aizudin, Wangqin Fu, Johannes Kasnatscheew, and Martin Winter.
2. Book Title: [Resource Recovery in Drinking Water Treatment](#) (1st Edition), 2023, Elsevier, Paperback ISBN: 9780323993449, eBook ISBN: 9780323993456. Edited by Mika Sillanpaa, Ali Khadir, Khum Gurung. Book Chapter: Polymeric/ceramic membranes for water use. Authors: Nur Hashimah Alias, Mohd Haiqal Abd Aziz, Mohd Ridhwan Adam, Marliyana Aizudin, and **Edison Huixiang Ang***.

6. Intellectual Properties

1. Marliyana BINTE AIZUDIN and **Edison Huixiang Ang*** “Method For Producing Conductive Ink With Two-Dimensional Graphite-Based Composite” Technical Disclosure (NTU Ref: 2023-431) (Filed on 10th Nov 2023)
2. Marliyana BINTE AIZUDIN and **Edison Huixiang Ang*** “Sustainable Production of Molybdenum Carbide (Mxene) From Fruit Waste For Improved Solar Evaporation” Technical Disclosure (NTU Ref: 2023-111) (Filed on 15th Mar 2023)

7. Research Grants

2024

- (PI) Additive Manufacturing of High-Performance Electrodes for Rechargeable Li-CO₂ batteries. NIE AcRF (S\$100,000.00) Project ID: RI 3/23 EAH (Awarded 1st May 2024 to 30th April 2026)
- (PI) Metallic Lithium Recycling from Spent Lithium-ion Batteries via Selective Lithium-ion Conducting Membrane. Funded by MOE Tier 1 (S\$140,812.00) Project ID: RG88/23 (Awarded 1st Mar 2024 to 28th Feb 2026)

2023

- (Co-PI) A 3D-printed Early Disease AloT Sensor for both Indoor and Outdoor Agri-food. Funded by NAMIC (S\$77,706) Project ID: M22N2K0014 (Awarded 1st Aug 2023 to 31st Jul 2024)

2022

- (PI) Sustainable Development of Two-Dimensional-based Membrane through Upcycling of Plastics Wastes. Funded by MOE AcRF Tier 1 (S\$99,895.20) Project ID: RG10/22 (Awarded 1st Nov 2022 to 31st Oct 2024)
- (PI) Membrane Disinfection of Water. Funded by NRF (S\$246,400.00) Project ID: NRF-MP-2022-0001 (Awarded 19th Sep 2022 to 18th Sep 2024)
- (PI) Development of Low-Cost Carbon-based Membrane Separator for Zinc-Sulfur Batteries. Funded by NIE AcRF (S\$99,990.00) Project ID: RI 1/21 EAH (Awarded 3rd Feb 2022 to 1st Mar 2025)

2021

- (PI) 3D Printed Micro-thermoelectric Module for Urban Farming Applications. Funded by NAMIC/NTUitive (S\$17,610.00) Project ID: 2020050 (Awarded on 7th Dec 2021 to 31st March 2022)
- (PI) Zinc-ion Batteries: A Quest Beyond Conventional Lithium-ion Batteries – Funded by NIE (S\$44,536.16) Project ID: NIE-SUG4/20AHX (Awarded on 19th Apr 2021 to 31st Mar 2022)

2021 to 18th Apr 2023)

- (Co-PI) Development of an Online Teaching, Learning and Assessment Cell Culture Laboratory Practical Package for Undergraduate and Graduate Students – Funded by I3G (S\$98,370.00) Project ID: I3G 15/21/PL (Awarded on 29th Nov 2021 to 31st May 2023)

- (PI) 3D-Printed Electrode for High-Energy Rechargeable Batteries – Funded by NAMIC/NTUitive (S\$24,000.00) Project ID: NAMIC 3/20 EAH (2020043) (Awarded on 1st Jan 2021 to 31st Mar 2021)

- (PI) 3D Printing Membrane for Industrial Wastewater Treatment – Funded by NAMIC/NTUitive (S\$24,000.00) Project ID: NAMIC 2/20 EAH (2020042) (Awarded on 1st Jan 2021 to 31st Mar 2021)

2020

- (Co-PI) 3D-Printing Technology for Flexible Rechargeable Batteries – Funded by NAMIC/NTUitive (S\$24,960.00) Project ID: 2020027 (Awarded on 18th Aug 2020 to 31st Mar 2021)

8. Awards and Honors

1. [World's Top 2% of Scientists \(Stanford-Elsevier\)](#)
2. Springer Nature Author Service Award, 2025 of Scientific Reports. This award recognises your exceptional service in improving the author experience and ensuring the peer review process is efficient, constructive and fair
3. [Young Scientist Award](#), Global Conference for Decarbonization of Energy and Materials, 2024.
4. [ISE-Elsevier Prize in Applied Electrochemistry](#), 2024. The accomplishments of a younger electrochemist in the field of applied electrochemistry are honored with this prize.
5. [Emerging Investigators](#) of Royal Society of Chemistry Publisher, Materials Horizons (Impact factor: 12.2), 2024. This theme issue features exceptional work by early-career researchers working in the field of materials science.
6. [Early-Career Researchers](#) of Proceedings of the National Academy of Sciences Publisher, PNAS (Impact factor: 12), 2023. PNAS is dedicated to featuring outstanding original research conducted by early-career researchers (ECRs) in diverse fields, encompassing biological, physical, and social sciences, mathematics, as well as computer science.
7. [Emerging Investigators](#) of Royal Society of Chemistry Publisher, Chemical Communications (Impact factor: 4.9), 2023. This annual special collection showcases research carried out by internationally recognised, up-and-coming scientists in the early stages of their independent careers, and who are making outstanding contributions to their respective fields.
8. [PIERS Young Scientists Award](#), 2023. The PIERS Young Scientists Award recognizes early-career researchers, typically under the age of 40, who have demonstrated exceptional research achievements and potential in the field of electromagnetics.
9. [The Rising Stars of Wiley \(Advanced Science\)](#), 2023. The Rising Stars series collects outstanding research articles on studies conceptualized and supervised by recognized early career researchers from around the world.
10. [Young Editorial Board Member](#) of Elsevier Publisher, Journal of Energy Chemistry (Impact Factor: 13.599), 2023. Young Editorial Board to recognize outstanding early career researchers and engage them in a path towards editorial work.

11. [Emerging Investigators](#) of Royal Society of Chemistry Publisher, Nanoscale (Impact factor: 8.307), 2023. This theme issue highlighting 2023's rising stars of materials chemistry research and gathers the very best work from materials chemists in the early stages of their independent career.
12. [AIChE SLS Young Faculty Award](#), 2022. This award accords the awardee for their outstanding contribution to the chemical engineering society and chemical industry.
13. [NIE/NTU Excellence in Research Award](#), 2022. This award accords the highest recognition within the Institute to individuals or teams who have made outstanding contributions in extending the frontiers of research and knowledge.
14. [Young Chemists](#) of Wiley Publisher, Chemistry-A European Journal (Impact Factor 5.020), 2022. This theme issue features young and emerging scientists from around the world in 2022.
15. [SNIC-Prof Lee Soo Ying Early Career Research Award](#), 2022. Recognize early-career researchers for outstanding contributions to chemistry field.
16. [Sabic Young Professional Award 2022](#). Recognize outstanding and internationally recognized contributions in particle technology by a young professional under 45 years old.
17. [Emerging Investigators](#) of Royal Society of Chemistry Publisher, Journal of Materials Chemistry A (Impact factor: 14.511), 2022. This theme issue highlighting 2022's rising stars of materials chemistry research and gathers the very best work from materials chemists in the early stages of their independent career.
18. [Young Scientist Award](#). Awarded by International Association of Advanced Materials to outstanding early career scientists in the field of science, engineering, and technology, 2022.
19. [Vebleo Fellow Award](#). Awarded to researcher or scientist who has prominence and leadership in the field of science, engineering, and technology, 2021.
20. [Outstanding ASIAN Science Diplomat Award](#). Awarded to Outstanding Scientists and Engineers in Southeast Asia, 2021.

9. Editorial Board Member

1. Young Editorial Board Member for eScience (IF: 42.9)
2. [Early Career Researchers Editorial Board of Energy & Environmental Materials](#) (IF: 13.0)
3. Youth Editorial Board Member for Carbon Energy (IF: 19.5)
4. [Early Career Advisory Board Member of Materials Horizons](#) (IF: 12.2)
5. [Early Career Editorial Board of Chemical Engineering Journal](#) (IF: 13.4)
6. [Young Editorial Board Member of Journal of Energy Chemistry](#) (IF: 14.0)
7. Young Editorial Board Member of Collagen and Leather
8. Young Editorial Board Member of Carbon Neutrality.
9. [Associate Editor of Scientific Reports](#)
10. [Associate Editor of Frontiers in Chemistry](#)
11. Associate Editor of Frontiers in Environmental Chemistry
12. Associate Editor of Frontiers in Electronic Materials

10. Keynote Speaker/Invited Talk/Contributed Talk/Poster

Keynote Presentations

- Ang, E. H. (2025, November). 2nd International Conference on Advanced Materials & Sustainable Energy Technologies 2025: AMSET 2025, Sunway University, Kuala Lumpur, Malaysia
- Ang, E. H. (2025, October). Belt and Road Conference on Advanced Materials 2025 (BRCAM2025), NingBo, Zhejiang, China
- Ang, E. H. (2025, March). Evolution of Designing Better Materials for Future Batteries. Keynote Address, Exploring New Frontiers of Science Forum, Shanghai, China.
- Ang, E. H. (2021, November). Chemistry of Two-Dimensional Nanomaterials for Energy Storage and Membrane Technology (Online). Keynote Address, Materials Science, Engineering and Technology, Singapore.

Invited Presentations

- Ang, E. H. (2025, September). Advanced Materials for Applied Electrochemistry, 76th Annual Meeting of the International Society of Electrochemistry, Mainz, Germany
- Ang, E. H. (2024, November). *Enhanced 2D MXene Nanomaterials: Unlocking Superior Hydrogen Production through Metal and Heteroatom Doping*. Paper presented at Global Conference for Decarbonization of Energy and Materials, Singapore.
- Ang, E. H. (2023, October). *Transforming 2D Nanomaterials into 3D Marvels*. Paper presented at TEDx conference, Singapore.
- Ang, E. H. (2023, September). *Powering the Future: Unleashing the Potential of Two-Dimensional Nanomaterials in Energy Storage*. Paper presented at MESA-UASR

Contributed Presentations

- **Ang, E. H.**[^] (2024, May). Transforming Water Purification: Harnessing Waste-based 2D Nanosheet Membranes for Enhanced Light-to-Heat Energy Conversion. Paper presented at Spring Meeting European Materials Research Society, Strasbourg, France.
- *Aizudina, M., & **Ang, E. H.**[^] (2023, July). Upcycling Fruit Waste as a Solar Absorber for Water Desalination. Paper presented at 2023 5th Chemistry National Meeting Singapore (ChnmSG5), Singapore.
- **Ang, E. H.**[^] (2023, June). Engineering Two-dimensional Plasmonic Nanosheets Arrays as Spacer for Enhanced Solar Membrane Distillation of Seawater. Paper presented at Progress In Electromagnetics Research Symposium 2023, Prague, Czech Republic.
- **Ang, E. H.**[^] (2022, November). Strategies for Engineering Two-Dimensional Nanomaterials for Efficient Water Transportation. Paper presented at 2022 American Institute of Chemical
- **Ang, E. H.**[^], Velioğlu, S., & Chew, J. W. (2020, December). Tunable affinity separation enables ultrafast solvent permeation through layered double hydroxide membrane. Paper presented at 12th International Congress on Membranes and Membrane Processes (Online), London, United Kingdom.

Conference Papers (Published in Proceedings)

- **Ang, E. H.**[^] (2022). Chemistry of Two-Dimensional Nanomaterials for Energy Storage and Membrane Technology. In null (Ed.), Chemistry of Two-Dimensional Nanomaterials for Energy Storage and Membrane Technology (Online) (pp. 1-2). Linköping Municipality, Sweden: Video Proceedings of Advanced Materials.

11. Media Coverage

1. The following news featured on the development of aqueous ammonium-ion batteries (Energist, China, 2025)
https://mp.weixin.qq.com/s/JhIJNd5X-PqeE6Jq1c-a_A
2. The following news featured on the use of AI for energy materials discovery (Interesting Engineering, USA, 2025)
<https://interestingengineering.com/innovation/breakthrough-boosts-zinc-ion-battery-efficiency>
(New York Weekly, USA, 2025) <https://nyweekly.com/tech/from-materials-scientist-to-ai-innovator-dr-edison-angs-quest-to-redefine-energy-materials/>
3. The following news featured on the development of Janus homojunction 2D materials for green hydrogen production (Yahoo Finance, USA, 2025)
<https://finance.yahoo.com/news/scientists-design-2d-material-could-063100903.html>
(Fuel Cell Works, USA, 2025)
<https://fuelcellworks.com/2025/02/14/hydrogen/scientists-design-new-2d-material-that-could-transform-green-hydrogen-production>
(Hydrogen Central, Netherland, 2025)
<https://hydrogen-central.com/scientists-design-new-2d-material-that-could-transform-green-hydrogen-production/>
(The Globe and Mail, Canada, 2025)
<https://www.theglobeandmail.com/investing/markets/markets-news/Newsfile/30933956/scientists-design-new-2d-material-that-could-transform-green-hydrogen-production/>
4. The following news featured on the development of graphitic nanofiber for efficient degradation of organic pollutants.
 - <https://mp.weixin.qq.com/s/twoJjOFCHV76S1WyagF7vQ>
5. The following news featured on the development of nanocatalyst for wastewater treatment
 - <https://www.nanowerk.com/nanotechnology-news3/newsid=65698.php>
 - <https://www.techexplorist.com/turning-tide-how-new-nanocatalyst-cleans-water-like-never-before/88724/>
 - <https://www.ntu.edu.sg/nie/news-events/news/detail/turning-the-tide-how-a-new-nanocatalyst-cleans-water-like-never-before>
6. The following news featured on the review of using MXene-based materials as supercharge batteries materials
 - https://mp.weixin.qq.com/s/RwD1cFtNWmHsCP_SXSaNmA
 - <https://www.nanowerk.com/nanotechnology-news3/newsid=65680.php>
7. The following news featured on a new 2-in-1 floating solar device for water purification
 - <https://mp.weixin.qq.com/s/GnSloLw4RW1v-uWWGneCZg>
 - <https://www.nanowerk.com/nanotechnology-news3/newsid=65687.php>
 - <https://www.techexplorist.com/game-changer-2-in-1-floatable-solar-device-cleans-water-and-tackles-pollutants/88372/>
 - <https://www.ntu.edu.sg/nie/news-events/news/detail/game-changer-2-in-1-floatable-solar-device-cleans-water-and-tackles-pollutants>

8. The following news featured on Dr Edison's journey from academic challenges.
 - <https://havily.com/resilience-and-revelation-dr-edison-angs-journey-from-academic-challenges-to-scientific-eminence/>
 - <https://www.todayonline.com/gen-y-speaks/gen-y-speaks-science-dunce-school-refused-give-now-science-professor-2457311>
 - <https://www.channelnewsasia.com/listen/daily-cuts/letter-myself-how-setbacks-are-part-dr-edison-angs-success-formula-4557146>
9. The following news featured on the innovation of NASICON materials for sodium ion batteries.
 - <https://www.technologynetworks.com/applied-sciences/articles/supercharging-batteries-with-improved-material-design-387624> (Technology Network, United Kingdom, 2024)
 - <https://timesofrising.com/dr-edison-ang-pioneering-energy-storage-solutions-for-a-sustainable-tomorrow-2/>
 - <https://www.nanowerk.com/spotlight/spotid=65347.php> (Nanowerk – Top Ten Spotlights, Germany, 2024)
8. The following news featured on the innovation of 3D graphene ink for advanced 3D Printing Technologies
 - <https://nykdaily.com/2024/02/dr-edison-ang-pioneering-graphene-based-ink-for-advanced-3d-printing-technologies/>
9. The following news featured on the pioneering innovation in secondary amine synthesis
 - <https://techmoduler.com/dr-edison-ang-pioneering-innovation-in-secondary-amine-synthesis/>
 - <https://www.nanowerk.com/spotlight/spotid=64716.php> (Nanowerk – Top Ten Spotlights, Germany, 2023)
10. The following news featured on the supercharging of ammonia production using fixing oxygen gap techniques
 - <https://nybpost.com/electrochemical-innovation-paving-the-way-for-sustainable-ammonia-production/> (New York Business Post, USA, 2023)
 - https://mp.weixin.qq.com/s/ZFfj_Yxktwm_RCVFYzCPJg (Weixin - China, 2023)
 - [Tailored nanograins enable greener ammonia production \(nanowerk.com\)](https://www.nanowerk.com) (Nanowerk – Top Ten Spotlights, Germany, 2024)
 - [Revolutionizing Ammonia Production: Groundbreaking Green Catalyst Sparks Hope for Sustainable Future | Asia Research News](#) (Asia research news, 2024)
 - [Green Revolution in Ammonia Production Unveiled \(techexplorist.com\)](https://techexplorist.com) (Techexplorist, India, 2024)
 - <https://www.ntu.edu.sg/nie/news-events/news/detail/revolutionizing-ammonia-production-groundbreaking-green-catalyst-sparks-hope-for-sustainable-future> (NIE/NTU, Singapore, 2024)
 - <https://www.ntu.edu.sg/nie/news-events/news/detail/green-revolution-in-ammonia-production-unveiled> (NIE/NTU, Singapore, 2024)
 - <https://www.ntu.edu.sg/nie/news-events/news/detail/tailored-nanograins-enable-greener-ammonia-production> (NIE/NTU, Singapore, 2024)
 - <https://www.ntu.edu.sg/nie/news-events/news/detail/electrochemical-innovation-paving-the-way-for-sustainable-ammonia-production> (NIE/NTU, Singapore, 2024)
 - <https://www.growkudos.com/publications/10.1073%25252Fpnas.2306673120/reader>

11. The following news featured on the review of using graphene-based materials as supercharge batteries materials
 - <https://mp.weixin.qq.com/s/NrMttc3l3Wkh0twre1ibOw>
 - <https://www.growkudos.com/publications/10.1002%25252Fsmall.202305217/reader>
12. The following news featured on the use of covalent organic framework for generation of H₂O₂
 - <https://mp.weixin.qq.com/s/HwsW5HZdiHTvOftRAOVaNA>
13. The following news featured on the development of water purifier from fruit wastes:
 - www.straitstimes.com/singapore/ntu-scientist-turns-fruit-waste-into-material-that-can-be-used-in-water-purifier (The Straits Times, Singapore, 2023)
 - <https://mothership.sg/2023/07/ntu-fruit-peels-mxenes-purify-water/> (Mothership, Singapore, 2023)
 - www.seithi.mediacorp.sg/singapore/banana-peel-purify-water-648921 (Seithi Mediacorp, Singapore, 2023)
 - www.theonlinecitizen.com/2023/02/17/singapore-scientist-develops-method-to-produce-ultra-thin-material-from-fruit-waste-for-solar-powered-water-purification/ (TOC Asia, Singapore)
 - www.eco-business.com/videos/fruit-peels-to-the-rescue/ (Eco-business, Singapore, 2023)
 - www.ntu.edu.sg/news/detail/turning-fruit-and-plastic-wastes-into-useful-materials-for-water-purification (NTU News, Singapore, 2023)
 - www.nie.edu.sg/about-us/news-events/news/news-detail/ntu-scientist-turns-plastic-waste-into-material-that-can-be-used-in-water-purifier (NIE News, Singapore, 2023)
 - www.interestingengineering.com/innovation/fruit-waste-to-purify-water (Interesting Engineering, United States, 2023)
 - www.technologynetworks.com/applied-sciences/articles/how-do-you-make-a-water-purifier-from-fruit-waste-370664 (Technology Network, United Kingdom, 2023)
 - www.nanowerk.com/spotlight/spotid=62411.php (Nanowerk – Top Ten Spotlights, Germany, 2023)
 - www.trendsderzukunft.de/trinkwasser-dank-obstabschalen/ (Trends Der Zukunft, Germany, 2023)
 - www.change.inc/energie/bijzondere-ontdekking-water-zuiveren-met-behulp-van-ruitschillen-39663 (Change Inc, Netherlands, 2023)
 - www.newatlas.com/good-thinking/fruit-waste-mxene-water-purifying-solar-still/ (New Atlas, Australia, 2023)
 - www.sohuutritue.net.vn/giai-phap-huu-ich-moi-bien-vo-dua-kho-thanh-vat-lieu-loc-nuoc-gia-re-d157337.html (So Huu Tri Tuw, Vietnam, 2023)
 - www.inceptivemind.com/turning-fruit-waste-useful-materials-water-purification/29846/ (Inceptive Mind, India, 2023)
 - www.aftabnews.ir/fa/news/828142/تصفیه آب با یوست میوه (Aftanb news, Iran, 2023)
 - <https://www.asiaresearchnews.com/content/recycling-fruit-waste-solar-absorber-water-desalination> (Asia research news, 2023)
14. The following news featured on the development of new graphene ink for additive manufacturing:
 - www.philstar.com/other-sections/education-and-

[home/2022/09/28/2209443/how-singapore-professor-revolutionized-manufacturing-technology-nanomaterials](https://www.philstar.com/home/2022/09/28/2209443/how-singapore-professor-revolutionized-manufacturing-technology-nanomaterials) (Philstar, Philippine, 2022)

- www.thehighereducationreview.com/magazine/nie-professor-revolutionising-manufacturing-technology-with-his-passion-in-nanomaterials-NDNK673788235.html (Higher Education Review, Singapore, 2022)

15. The news featured the unique engineering method of using joule heat to prepare a novel metal-organic nanosheets composite, which can be applied in rechargeable batteries: <https://mp.weixin.qq.com/s/HbPV-zpfaQeFsnfJuOh9Vw> (Weixin, China, 2022)

- The news featured Dr Edison Ang from doing poorly in science to become science professor: <https://youthopia.sg/read/impact-0560-from-doing-poorly-in-science-to-becoming-a-science-professor/>
- The news featured the effective construction of structurally stable carbon-based hybrid materials for high-performance lithium-ion batteries: https://mp.weixin.qq.com/s/5rYf4254m_Er_IVjRw0MIA (Weixin, China, 2021)
- The news featured on the recycling technology of waste lithium battery materials: https://mp.weixin.qq.com/s/TtT7l_nWxeIMjP64t2dyA (Weixin, China, 2021)
- The news featured on the design of next-generation high voltage zinc-ion batteries: <https://mp.weixin.qq.com/s/Lb0zwbLOxPdCS6HR0DoNYQ> (Weixin, China, 2021)
- The news featured on the development of carbon-based materials in solid-state zinc-air batteries: <https://mp.weixin.qq.com/s/jd5dnXn5cjHAAd8Z1u46Bw> (Weixin, China, 2020)