



能源電池科技博士學位學程

Ph.D. Program of Energy and Battery Technology

一、師資

職稱	姓名	學歷	專長
講座教授 兼綠能中心主任 兼學程主任	楊純誠 Chun-Chen Yang	美國哥倫比亞大學 化工博士	電化學、電化學工程、電池技術、高分子電解質膜
教授	壽雅史 Kotobuki, Masashi	University of Yamanashi, Graduate School of Engineering 博士	固態電解質奈米材料合成分析、材料特性分析、鋰電池材料分析
助理教授	洪太峰 Tai-Feng Hung	中原大學 化學研究所博士	儲能元件關鍵材料開發與系統設計、奈米複合雙效觸媒結構設計與合成、電化學檢測與分析、高分子合成與加工

二、期刊論文

- [1] Kavitha Balasubramanian, Sayee Kannan Ramaraj, Chelladurai Karuppiyah, Chun-Chen Yang, Karuppiyah Nagaraj, "A novel Schiff base derived quinoline moieties as a selective fluorophore for Sn²⁺ ion sensing", INORGANIC CHEMISTRY COMMUNICATIONS, 155, pp.111069-1, pp.111069-9, 2023, 【SCIE & EI】
- [2] Tadesu Hailu Mengesha, Shimelis Lemma Beshahwured, Yi-Shiuan Wu, She-Huang Wu, Rajan Josee, Chun-Chen Yang, "A polydopamine-modified garnet-based polymer-in-ceramic hybrid solid electrolyte membrane for high-safety lithium metal batteries", CHEMICAL ENGINEERING JOURNAL, 452, pp.139340-1, pp.139340-18, 2023, 【SCIE & EI】
- [3] Teshome Assefa Nigatu, Hailemariam Kassa Bezabh, Shi-Kai Jiang, Bereket Woldegbreal Taklu, Yosef Nikodimos, Sheng-Chiang Yang, She-Huang Wu, Wei-Nien Su, Chun-Chen Yang, Bing Joe Hwang, "An anode-free aqueous hybrid batteries enabled by in-situ Cu/Sn/Zn alloy formation on pure Cu substrate", ELECTROCHIMICA ACTA, 443, pp.141883-1, pp.141883-9, 2023, 【SCIE & EI】
- [4] Teshome Assefa Nigatu, Hailemariam Kassa Bezabh, Shi-Kai Jiang, Bereket Woldegbreal Taklu, Yosef Nikodimos, Sheng-Chiang Yang, She-Huang Wu, Wei-Nien Su, Chun-Chen Yang, Bing Joe Hwang, "Characterization of electrochemical double layer capacitor electrode using self-discharge measurements and modeling", APPLIED ENERGY, 334, pp.120658-1, pp.120658-12, 2023, 【SCIE & EI】
- [5] Saranvignesh Alagarsamy, Chelladurai Karuppiyah, Shen-Ming Chen, Chellakannu Rajkumar, Sandhanasamy Devanes, Mohamad S. Al Salhi, Prabhakarn Arunachalam, Haekyoung Kim, Chun-Chen Yang, "Chrysanthemum flower-like copper molybdenum oxide decorated graphene

- oxide nanoribbon composite: A novel positive electrode material for asymmetric supercapacitor devices”, JOURNAL OF ENERGY STORAGE, 74, pp.109271-1, pp.109271-11, 2023, 【SCIE & EI】
- [6] Kotobuki, Masashi Hasan, Md. Mahmudul, “Editorial: Introduction to the Special Issue on Energy Storage and Conversion”, FUNCTIONAL MATERIALS LETTERS, 16, (8), pp.2302002-1, pp.2302002-1, 2023, 【SCIE & EI】
- [7] Sharmila Chandrasekaran, Elangovan Arumugam, Shanmugam Ramasamy, Chelladurai Karuppiyah, Shankar Bhaskaran, Chun-Chen Yang, Dhanam Nallapandi, Kalimuthu Palanisamy, “Exploring the new electrocatalyst based on pyrochlore manganese phosphate/graphene composite for hydrogen evolution and oxygen evolution reaction: An experimental and computational study”, INTERNATIONAL JOURNAL OF HYDROGEN ENERGY, 48(28), pp.10423, pp.10437, 2023, 【SCIE & EI】
- [8] Sivakumar Musuvadhi Babulal, Lakshmipriya Musuvadhi Babulal, Shen-Ming Chen, Chelladurai Karuppiyah, Chun-Chen Yang, “Fabrication of iron tin oxide/tin oxide intertwined graphitic carbon nitride hybrid composite electrocatalyst for electrochemical detection of 5-ami-nosalicylic acid in human urine and pharmaceutical tablet samples”, Journal of the Taiwan Institute of Chemical Engineers, 145, pp.104837-1, pp.104837-10, 2023, 【SCIE & EI】
- [9] Raja Palani, Yi-Shiuan Wu, She-Huang Wu, Wen-Chen Chien, Shingjiang Jessie Lue, Rajan Jose, Chun-Chen Yang, “Fascinating Bifunctional Electrocatalytic Activity via a Mesoporous Structured FeMnO₃@ZrO₂ Matrix as an Efficient Cathode for Li-O₂ Batteries”, ACS APPLIED ENERGY MATERIALS, 6, (9), pp.4734, pp.4747, 2023, 【SCIE & EI】
- [10] Li-Fan Hsu, Karthic Natarajan, Chelladurai Karuppiyah, Chun-Chen Yang, “Green reduction and uniform assembly of silver nanoparticles on polydopamine functionalized sulfur-doped graphitic carbon nitride nanosheets for highly sensitive H₂O₂ detection via nonenzymatic approach”, COLLOIDS AND SURFACES A-PHYSICOCHEMICAL AND ENGINEERING ASPECTS, 677, pp.132383-1, pp.132383-12, 2023, 【SCIE & EI】
- [11] Ling, Jinkiong Misnon, Izan Izwan Ab Rahim, Mohd Hasbi Yang, Chun-Chen Jose, Rajan, “Improving Fresh and End-Used Carbon Surface by Sunlight: A Step Forward in Sustainable Carbon Processing”, ACS SUSTAINABLE CHEMISTRY & ENGINEERING, 11, (41), pp.14976, pp.14985, 2023, 【SCIE & EI】
- [12] Wan-Ling Liao, Mohamed M. Abdelaal, Rene Mary Amirtha, Chia-Chen Fang, Chun-Chen Yang, Tai-Feng Hung, “In Situ Construction of Nitrogen-Doped and Zinc-Confined Microporous Carbon Enabling Efficient Na⁺-Storage Abilities”, International Journal of Molecular Sciences, 24, (10), pp.8777-1, pp.8777-13, 2023, 【SCIE & EI】
- [13] Ammaiyappan Anbunathan, Chelladurai Karuppiyah, Jeng-Kuei Chang, Rajan Jose, Chun-Chen Yang, “In Situ Grown ZIF67 Particles on a Glass Fiber Separator: The Performance Booster and Anode Defender for Lithium-Sulfurized Polyacrylonitrile (SPAN) Batteries”, ACS APPLIED ENERGY MATERIALS, 6, (6), pp.3549, pp.3565, 2023, 【SCIE & EI】
- [14] Priyatrisha Mathur, Jeng-Ywan Shih, Ying-Jeng James Li, Tai-Feng Hung, Balamurugan Thirumalraj, Sayee Kannan Ramaraj, Rajan Jose, Chelladurai Karuppiyah, Chun-Chen Yang, “In Situ Metal Organic Framework (ZIF-8) and Mechano-fusion-Assisted MWCNT Coating of

- LiFePO₄/C Composite Material for Lithium-Ion Batteries”, BATTERIES-BASEL, 9, (3), pp.182-1, pp.182-19, 2023, 【SCIE & EI】
- [15] Binggong Yan, Zhen Wang, Hongliang Ren, Xizhao Lu, Yang Qu, Weihang Liu, Kaiyong Jiang, Masashi Kotobuki, “Interfacial modification of Na₃Zr₂Si₂PO₁₂ solid electrolyte by femtosecond laser etching”, IONICS, 29, (2), pp.865, pp.870, 2023, 【SCIE & EI】
- [16] Kumlachew Zelalem Walle, Jayaraman Pandeewari, Gunamony Jenisha and Masashi Kotobuki, “Li-Na-based hybrid battery”, FUNCTIONAL MATERIALS LETTERS, 16, (2), pp.2340011-1, pp.2340011-10, 2023, 【SCIE & EI】
- [17] Bincy Lathakumary Vijayan, Amina Yasin, Izan Izwan Misnon, Chelladurai Karuppiah, Chun-Chen Yang, Rajan Jose, “Lithium-ion adsorption on surface modified porous carbon”, JOURNAL OF ENERGY STORAGE, 71, pp.108221-1, pp.108221-10, 2023, 【SCIE & EI】
- [18] Nikodimos, Yosef Su, Wei-Nien Shitaw, Kassie Nigus Jiang, Shi-Kai Abrha, Ljaleme Hadush Weret, Misganaw Adigo Merso, Semaw Kebede Hagos, Teklay Mezgebe Huang, Chen-Jui Lakshmanan, Keseven Huang, Wei-Hsiang Chang, Chia-Yu Lin, Jhih-Min Wu, She-Huang Yang, Chun-Chen Hwang, Bing Joe, “Multifunctional electrospun PVDF-HFP gel polymer electrolyte membrane suppresses dendrite growth in anode-free Li metal battery”, ENERGY STORAGE MATERIALS, 61, pp.102861-1, pp.102861-11, 2023, 【SCIE & EI】
- [19] Syam G. Krishnan, Arunachalam Arulraj, Priyanka Jagadish, Mohammad Khalid, Mahmoud Nasrollahzadeh, Ran Fen, Chun-Chen Yang, Gurumurthy Hegde, “Pore size matters!-a critical review on the supercapacitive charge storage enhancement of biocarbonaceous materials”, CRITICAL REVIEWS IN SOLID STATE AND MATERIALS SCIENCES, 48, (1), pp.1, pp.56, 2023, 【SCIE & EI】
- [20] Jeyakumar, Juliya Seenivasan, Manojkumar Wu, Yi-Shiuan Wu, She-Huang Chang, Jeng-Kuei Jose, Rajan Yang, Chun-Chen, “Preparation of long-term cycling stable Ni-rich concentration-gradient NCMA cathode materials for Li-ion batteries”, JOURNAL OF COLLOID AND INTERFACE SCIENCE, 639, pp.145, pp.159, 2023, 【SCIE & EI】
- [21] Chen, Chao Wang, Kexin He, Hongying Hanc, Emil Kotobuki, Masashi Lu, Li, “Processing and Properties of Garnet-Type Li₇La₃Zr₂O₁₂ Ceramic Electrolytes”, SMALL, 19, (12), pp.1, pp.33, 2023, 【SCIE & EI】
- [22] Masanobu Nakayama, Takuya Horie, Ryosuke Natsume, Shogo Hashimura, Naoto Tanibata, Hayami Takeda, Hirotaka Maeda, Masashi Kotobuki, “Reaction Kinetics of Carbonation at the Surface of Garnet-Type Li₇La₃Zr₂O₁₂ as Solid Electrolytes for All-Solid-State Li Ion Batteries”, JOURNAL OF PHYSICAL CHEMISTRY C, 127, (16), pp.7595, pp.7601, 2023, 【SCIE & EI】
- [23] Masashi Kotobuki, Binggong Yan, Li Lu, “Recent progress on cathode materials for rechargeable magnesium batteries”, ENERGY STORAGE MATERIALS, 54, pp.227, pp.253, 2023, 【SCIE & EI】
- [24] Pandeewari, Jayaraman Jenisha, Gunamony Walle, Kumlachew Zelalem Kotobuki, Masashi, “Recent Research Progress on All-Solid-State Mg Batteries”, BATTERIES-BASEL, 9, (12), pp.570-1, pp.570-29, 2023, 【SCIE & EI】
- [25] Chi Li, Yi-Xiu Chen, Jagabandhu Patra, Shi-Xian Lu, Chien-Te Hsieh, Chun-Chen Yang,

- Quan-Feng Dong, Ju Li, and Jeng-Kuei Chang, "Self-Discharge Behavior of Graphitic Cathodes for Rechargeable Aluminum Batteries", *ADVANCED FUNCTIONAL MATERIALS*, 33, (46), pp.2305511-1, pp.2305511-11, 2023, 【SCIE & EI】
- [26] Chelladurai Karuppiyah, Sivakumar Musuvadhi Babulal, Shen-Ming Chen, Selvakumar Palanisamy, Li-Fan Hsu, Chun-Chen Yang, Matteo Chiesa, "Simultaneous electrochemical determination of benzenediol compounds in environmental samples using nano architectures of hydrogen ammonium zinc molybdate layered double hydroxides integrated with carbon black modified electrode", *JOURNAL OF WATER PROCESS ENGINEERING*, 55, pp.104202-1, pp.104202-11, 2023, 【SCIE & EI】
- [27] Purna Chandra Rath, Ming-Song Liu, Shih-Ting Lo, Rajendra S. Dhaka, Dominic Bresser, Chun-Chen Yang, Sheng-Wei Lee, Jeng-Kuei Chang, "Suppression of Dehydrofluorination Reactions of a $\text{Li}_{0.33}\text{La}_{0.557}\text{TiO}_3$ -Nanofiber-Dispersed Poly(vinylidene fluoride-hexafluoropropylene) Electrolyte for Quasi-Solid-State Lithium Metal Batteries by a Fluorine-Rich Succinonitrile Interlayer", *ACS APPLIED MATERIALS & INTERFACES*, 15, (12), pp.15429, pp.15438, 2023, 【SCIE & EI】
- [28] Eyob Belew Abebe, Chun-Chen Yang, She-Huang Wu, Wen-Chen Chien, Ying-Jeng James Li, "Surface modification with Li_3PO_4 enhances the electrochemical performance of $\text{LiNi}_{0.9}\text{Co}_{0.05}\text{Mn}_{0.05}\text{O}_2$ cathode materials for Li-Ion batteries", *JOURNAL OF ALLOYS AND COMPOUNDS*, 947, pp.169455-1, pp.169455-11, 2023, 【SCIE & EI】
- [29] Tran, Hoai Khang Truong, Beta Thi Zhang, Bo-Rong Jose, Rajan Chang, Jeng-Kuei Yang, Chun-Chen, "Sandwich-Structured Composite Polymer Electrolyte Based on PVDF-HFP/PPC/Al-Doped LLZO for High-Voltage Solid-State Lithium Batteries", *ACS APPLIED ENERGY MATERIALS*, 6, (3), pp.1475, pp.1487, 2023, 【SCIE & EI】
- [30] Srinivasan Alagar, Muthukumar Ganesan, Chelladurai Karuppiyah, Chun-Chen Yang, Vivek Bagchi, Shakkthivel Piraman, "Strategic Design of Lithium-Rich Hierarchical $\text{Li}_{1.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}\text{O}_2$ Microcubes as High-Capacity Cathodes for Lithium-Ion Batteries", *ACS APPLIED ENERGY MATERIALS*, 6, (2), pp.622, pp.635, 2023, 【SCIE & EI】

三、研討會論文

- [1] Wan-Ling Liao, Tai-Feng Hung, "Carbon-Coated Sodium Vanadium Phosphate Nanocomposites As Efficient Cathode Materials for Sodium-Ion Batteries and Capacitors", 243rd ECS meeting, 波士頓, 美國, 2023/5/28, 【國際學術研討會】
- [2] Rene Mary Amirtha, Tai-Feng Hung, "Construction of a multifunctional composite layer for efficient protection of zinc anode", 2023 ICGET-TW, 台北市, 中華民國, 2023/10/26, 【國際學術研討會】
- [3] Mohamed M. Abdelaal, Tai-Feng Hung, "High proportional 1T phase nitrogen-doped MoS_2 /HPAC nanocomposites: electrochemical performance and Li^+ -storage mechanism", 2023 ICGET-TW, 台北市, 中華民國, 2023/10/26, 【國際學術研討會】
- [4] Mohamed M Abdelaal, Hao-Huan Hsu, Tai-Feng Hung, "Investigation of Lithium Storage in Hierarchical Porous Activated Carbon as an Anode for Dual Carbon Li-ion Capacitors", 1st

- International Symposium on Carbon Materials,台南市,中華民國,2023/1/31,【國際學術研討會】
- [5] Wan-Ling Liao, Kuan-Yu Chen, Chia-Chen Fang, Tai-Feng Hung,“Mesoporous and Carbon-Coated Sodium Vanadium Fluorophosphate for High-Voltage Sodium-Ion Batteries”,2023 International Conference on Smart Devices and Sustainable Energy,新北市,中華民國,2023/11/7,【國際學術研討會】
- [6] Tadesu Hailu Mengeshaa, Chun-Chen Yang,“Improved electrochemical performance of solid-state lithium metal batteries enabled by in-situ techniques constructed stable interface”,2023綠色電化學科技國際學術研討會暨2023年台灣電化學學會年會,Taiwan Technology,中華民國,2023/10/26,【國際學術研討會】
- [7] Chun-Chen Yang,“Surface modification of Ni-rich Quaternary Cathode Materials for improved performance and stability”,2023 INTERNATIONAL CONFERENCE ON HIERARCHICAL GREEN ENERGY MATERIALS,台南市,中華民國,2023/1/10,【國際學術研討會】
- [8] Masashi Kotobuki,“All-solid-state Na battery with novel flexible solid electrolyte”,The 2023 International Conference on Green Electrochemical Technologies and the 2023 Annual Meeting of Electrochemical Society of Taiwan,Taipei,中華民國,2023/10/26,【國際學術研討會】
- [9] Masashi Kotobuki,“Carbonation of garnet-type $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ solid electrolyte”,The function materials society meeting-2023 special workshop,Chongqing,大陸地區,2023/8/4,【國際學術研討會】
- [10] Masashi Kotobuki,“Stabilities of garnet-type solid electrolyte-theoretical and experimental approaches”,The 4th World Conference on Solid Electrolytes for Advanced Applications: Garnets and Competitors,Tromsø,挪威王國,2023/9/4,【國際學術研討會】
- [11] Mohamed M. Abdelaal, Tai-Feng Hung,“Battery-like Intercalation and Pseudocapacitance of Nitrogen-Doped MoS_2 /Hierarchal Porous Activated Carbon Anode for Superior Lithium-ion Storage”,2023明志科技大學綠色能源電池研討會暨成果海報競賽,新北市,中華民國,2023/3/31,【國內學術研討會】
- [12] Wan-Ling Liao, Tai-Feng Hung,“Carbon-coated $\text{Na}_3\text{V}_2(\text{PO}_4)_3$: an efficient composite material towards a long lifespan of symmetric sodium-ion batteries”,2023明志科技大學綠色能源電池研討會暨成果海報競賽,新北市,中華民國,2023/3/31,【國內學術研討會】
- [13] Wan-Ling Liao, Tai-Feng Hung,“Nitrogen-doped and Zinc-confined microporous carbon as efficient anode for Na^+ -storage application”,第七屆台灣碳材料學術研討會,桃園市,中華民國,2023/11/3,【國內學術研討會】
- [14] 廖婉玲, 洪太峰,“具優異倍率性能及循環穩定之新型碳負極材料開發及其儲鈉機制探討”,第18屆台塑企業應用技術研討會,新北市,中華民國,2023/6/9,【國內學術研討會】

四、研究及產學合作計畫

單位:元

項次	主持人	計畫名稱	委託單位	起訖日期	總計	政府	企業	本校
1	壽雅史	氯離子電池用高分子電解質的研製(1/3)	國科會	112/08/01 113/07/31	1,965,928	1,965,928	0	0
2	壽雅史	使用新型玻璃陶瓷電解質之全固態鈉電池的研製(2/3)	國科會	112/08/01 113/07/31	1,410,000	1,410,000	0	0
3	洪太峰	高效鹼金屬離子電容器核心材料開發與儲能機制研究(3/3)	國科會	112/01/01 112/12/31	1,400,000	1,400,000	0	0
4	楊純誠	112-113 年「全球優秀青年學子來臺蹲點計畫」(TEEP)	教育部	112/12/01 113/12/31	378,000	378,000	0	0
5	壽雅史	112-113 年「全球優秀青年學子來臺蹲點計畫」(TEEP)	教育部	112/12/01 113/12/31	220,500	220,500	0	0
6	吳宜萱	鋰鎳鈷錳三元正極材料(NCM811)塗佈於奈米石墨烯/鋁箔複合集電層之物化性檢測與組裝鈕扣型電池之電化學/熱性質分析	聖興科技股份有限公司	112/02/01 112/07/31	500,000	0	500,000	0
7	楊純誠	應用回收再生料碳酸鋰製備高電壓正極材料的設計及電池組裝、測試	優勝新能源再生科技股份有限公司	112/06/01 113/05/31	1,000,000	0	1,000,000	0
8	楊純誠	全固態鋰電池試製生產線之建置與試產技術驗證	台塑新智能科技股份有限公司	112/06/01 113/11/30	28,900,000	0	28,900,000	0

項次	主持人	計畫名稱	委託單位	起訖日期	總計	政府	企業	本校
			司					
9	洪太峰	鈉離子電池聚陰離子電極材料之元素摻雜及晶格結構機制探討	財團法人工業技術研究院	112/05/01 112/12/31	600,000	0	600,000	0
10	洪太峰	微米級正極活性材料合成及回收電性驗證	財團法人工業技術研究院	112/08/10 112/11/30	300,000	0	300,000	0
合計					36,674,428	5,374,428	31,300,000	0

五、專利

項次	發明人	專利權人	專利名稱	類別	證書字號	專利國家	生效日期
1	楊純誠	明志科技大學	用於電致變色裝置的全固態聚合物電解質膜及包含其的電致變色裝置	發明專利	I792937	國內	112/02/11
2	楊純誠	明志科技大學	全固体リチウム二次電池のリチウムフィルムアノードの製造方法	發明專利	JP7241437 B2	日本	112/03/17
3	楊純誠	明志科技大學	Method for fabricating gallium-doped lithium lanthanum zirconate, and all-solid-state battery including the same	發明專利	US1179917 0B2	美國	112/10/24

六、研究生論文

項次	研究生姓名	論文題目	指導教授
1	Teshome Assefa Nigatu	Aqueous Hybrid Batteries Improved by Hydrogen-bond Rich 1,2-Dimethoxy Ethane Additive	楊純誠
2	亞諾	Organic Anode Active Material for Electrochemical Energy Storage	簡文鎮
3	Juliya Jeyakumar	A Study on Structural and Morphological Evolution of Ni-rich Quaternary Li[Ni _{1-x-y-z} CoxMnyAlz]O ₂ for Lithium-ion Batteries	楊純誠

項次	研究生姓名	論文題目	指導教授
4	雷潘	Metal-organic framework derived hierarchical porous cathode materials and perovskites nanocomposite as efficient bifunctional catalytic activity and Li-O ₂ batteries applications	楊純誠
5	TADESU HAILU MENGESHA	Sandwich-Structured Composite Solid Electrolyte Membranes for High-Voltage Rechargeable Lithium-Metal Batteries	楊純誠