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Jian-Zhang Chen joined the faculty of National Taiwan University in 2007. His current research interests are rapid atmospheric pressure plasma materials processing, hydrogen technology (water electrolysis), perovskite solar cells and dye-sensitized solar cells, flexible energy storage devices, metal oxide materials and devices, and wearable devices.

研究主題

1. 淨零碳排氫能技術 (電解水產氫)
2. 超級電容電池 (金屬氧化物-碳材超級電容電池、鋁-空氣電池)
3. 常壓電漿材料製程技術
4. 常壓介電質輝光放電材料製程技術
5. 金屬 3D 列印技術 (中科院合作計畫)
6. 奈米材料能源元件
7. 氧化物電子材料與元件

最近代表性期刊論文


1. Pei-Ling Lan, I-Chih Ni, Chih-I Wu, Cheng-Che Hsu, I-Chun Cheng, and Jian- Zhang Chen* (2023, Aug). Ultrafast Fabrication of H2SO4, LiCl, and Li2SO4 Gel Electrolyte Supercapacitors with Reduced Graphene Oxide (rGO)-LiMnOx Electrodes Processed Using Atmospheric-Pressure Plasma Jet. *Micromachines*, vol. 14, p.1701.
2. Jheng-Yun Lai, Hong-Kai Chen, Cheng-Che Hsu, Jian-Zhang Chen (2023, Apr). LiMn2O4 Li-ion hybrid supercapacitors processed by nitrogen atmospheric-pressure plasma jet. *Ceramics International*, vol. 49, pp. 11067–11075.
3. Chih-Lin Chan, I-Chih Ni, Chih-I Wu, I-Chun Cheng, Jian-Zhang Chen (2023, Mar). Enhanced electrochemical performance of low-pressure-plasma-treated paper-based fluidic aluminum-air battery. *Physica Scripta*, vol. 98, p. 045620.
4. Chia-Yun Tseng, I-Chun Cheng, Jian-Zhang Chen (2022, Oct). Low-pressure-plasma-processed NiFe-MOFs/nickel foam as an efficient electrocatalyst for oxygen evolution reaction. *International Journal of Hydrogen Energy*, vol. 47, pp.35990-35998.
5. Chen-Han Chen, Ting-Wei Tsai, I-Chun Cheng, and Jian-Zhang Chen (2022, Aug). Superhydrophobic, Oleophobic, Self-Cleaning Flexible Wearable Temperature Sensing Device. *ECS Advances*, vol. 1, p.036502.
6. Chung-Yueh Shih, I-Chih Ni, Chih-Lin Chan, Cheng-Che Hsu, Chih-I Wu, I-Chun Cheng, Jian-Zhang

Chen* (2022, Aug). Helium Dielectric Barrier Discharge Plasma Jet (DBD Jet)-Processed Graphite Foil as Current Collector for Paper-Based Fluidic Aluminum-Air Batteries. *Energies*, vol. 15, p. 5914.

7. Jheng-Yun Lai, Cheng-Che Hsu, Jian-Zhang Chen (2022, Aug). Comparison between atmospheric-pressure-plasma-jet-processed and furnace-calcined rGO-MnOx nanocomposite electrodes for gel-electrolyte supercapacitors. *Journal of Alloys and Compounds*, Vol. 911, p.165006.
8. Chen Liu, Chia-Yun Tseng, Ying-Chyi Wang, I-Chun Cheng, Jian-Zhang Chen (2022, Apr). Low-Pressure Plasma-Processed Ruthenium/Nickel Foam Electrocatalysts for Hydrogen Evolution Reaction. *Materials*, vol. 15(7), p.2603.
9. Chen-Han Chen, I-Chun Cheng, Jian-Zhang Chen (2022, Mar). Facile method to convert petal effect surface to lotus effect surface for superhydrophobic polydimethylsiloxane. *Surfaces and Interfaces*, vol. 30, 101901.
10. Chen Liu, Cheng-Wei Hung, I-Chung Cheng, Cheng-Che Hsu, I-Chun Cheng, and Jian-Zhang Chen (2021, Oct). Dielectric Barrier Discharge Plasma Jet (DBDjet) Processed Reduced Graphene Oxide/Polypyrrole/Chitosan Nanocomposite Supercapacitors. *Polymers*, vol. 13, p.3585.
11. Jung-Hsien Chang, Song-Yu Chen, Yu-Lin Kuo, Chii-Rong Yang, Jian-Zhang Chen (2021, May). Carbon Dioxide Tornado-Type Atmospheric-Pressure-Plasma-Jet-Processed rGO-SnO2 Nanocomposites for Symmetric Supercapacitors. *Materials*, vol. 14, p.2777.
12. I-Hsuan Chen, Ming-Wei You, Jui-Hsuan Tsai, Jung-Hsien Chang, I-Chun Cheng, Cheng-Che Hsu, Shyh-Chyang Luo, Chien-Fu Chen, Jian-Zhang Chen (2021, Mar). Feasibility study of dielectric barrier discharge jet (DBDjet)-patterned perfluorodecyltrichlorosilane (PFDTS)-coated paper for biochemical diagnosis. *ECS Journal of Solid-State Science and Technology*, vol. 10, p.037005.
13. Jung-Hsien Chang, Ming-Feng Lin, Yu-Lin Kuo, Chii-Rong Yang, Jian-Zhang Chen, “Flexible rGO-SnO2 supercapacitors converted from pastes containing SnCl2 liquid precursor using atmospheric-pressure plasma jet, Ceramic International, vol. 47, pp. 1651-1659 (2021).
14. Chia-Hui Tseng, Jui-Chen Hsin, Jui-Hsuan Tsai, Jian-Zhang Chen, “Dielectric-barrier-discharge jet treated flexible supercapacitors with carbon cloth current collectors of long-lasting hydrophilicity,” Journal of the Electrochemical Society, vol. 167, p. 116511 (2020)
15. Zhen-Chun Chen; Yu Cheng; Chan-Cheng Lin; Chia-Shuo Li; Cheng-Che Hsu; Jian-Zhang Chen; Chih-I Wu; I-Chun Cheng, "In-Situ Atmospheric-Pressure Dielectric Barrier Discharge Plasma Treated CH3NH3PbI3 for Perovskite Solar Cells in Regular Architecture," Applied Surface Science, vol. 473, pp. 468-475 (2019).
16. Jui-Hsuan Tsai, I-Chun Cheng, Cheng-Che Hsu, Chu-Chen Chueh, Jian-Zhang Chen, "Feasibility study of atmospheric-pressure dielectric barrier discharge treatment on $CH_3NH_3PbI_3$ films for inverted planar perovskite solar cells," Electrochimica Acta, vol. 293, pp. 1-7 (2019).
17. Chia-Chun Lee, Tzu-Ming Huang, I-Chun Cheng, Cheng-Che Hsu, and Jian-Zhang Chen, "Time Evolution Characterization of Atmospheric-Pressure Plasma Jet (APPJ)-Synthesized Pt-$SnO_x$ Catalysts," Metals: Special issue - Plasmas Processes Applied on Metals and Alloys, Metals, vol. 8, 690.
18. Hung-Hua Chien, Chen-Yu Liao, Yu-Chuan Hao, Cheng-Che Hsu, I-Chun Cheng, Ing-Song Yu, Jian-Zhang Chen, "Improved performance of polyaniline/reduced-graphene-oxide supercapacitor using atmospheric-pressure-plasma-jet surface treatment of carbon cloth," Electrochimica Acta, vol. 260, pp. 391-399 (2018).