

Jian-Zhang Chen (陳建彰), Professor

環境與光電能源實驗室 (應力所 105 室)

Environmental and Energy Devices Laboratory



B.S. in Department of Mechanical Engineering,
National Taiwan University, 1996.

M.S. in Institute of Materials Science and Engineering,
National Taiwan University, 1998.

Ph.D. in Department of Electrical Engineering,
Princeton University, 2006.

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)
3. 常壓與低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. 奈米材料能源元件
6. 氧化物電子材料與元件

最近代表性期刊論文

1. You-Ren Lin*, Yuh-Kai Hwang*, Kei-Kei Chan*, Chia-Ling Wu*, Jian-Zhang Chen*, Feng-Cheng Chang* (2024, Dec). Lignosulfonate-derived porous carbon via self-activation for supercapacitor electrodes. *Industrial Crops & Products*, vol. 221, p. 119330. (SCI, 4/20, AGRICULTURAL ENGINEERING).
2. (Journal Cover Feature Article) Shuo-En Yu, Yu-Lun Su, I-Chih Ni, Yi-Cheng Chuang, Cheng-Che Hsu, Chih-I Wu, Yong-Song Chen, I-Chun Cheng, Jian-Zhang Chen* (2024, Jun). Direct Current Pulse Atmospheric Pressure Plasma Jet Treatment on Electrochemically Deposited NiFe/Carbon Paper and Its Potential Application in an Anion-Exchange Membrane Water Electrolyzer. *Langmuir*, vol. 40, pp.14978-14989. (SCI, 84/230, Chemistry, Multidisciplinary). nstc 111-2221-E-002-088-MY3.
3. Ying-Chyi Wang, Shuo-En Yu, Yu-Lun Su, I-Chun Cheng, Yi-Cheng Chuang, Yong-Song Chen, and Jian-Zhang Chen* (2024, Jan). NiFe₂O₄ material on carbon paper as an electrocatalyst for alkaline water electrolysis module. *Micromachines*, vol. 15, p. 62. (SCI, 29/86, Chemistry, Analytical). nstc 111-2221-E-002-088-MY3.
4. Yu-Lun Su, Shuo-En Yu, I-Chih Ni, Chih-I Wu, Yong-Song Chen, Yi-Cheng Chuang, I-Chun Cheng, Jian-Zhang Chen* (2024, Jan). Low-Pressure Plasma-Processed NiCo Metal–Organic Framework for Oxygen Evolution Reaction and Its Application in Alkaline Water Electrolysis Module. *Journal of Composites Science*, vol. 8, p.19. (SCI, 17/35, Materials Science, Composites). nstc 111-2221-E-002-088-MY3.
5. 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.
6. 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.

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 CH₃NH₃PbI₃ 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).