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Ding Jiang

Biomass valorization; Catalytic Pyrolysis; Biochar; DFT calculation; Photocatalysis;

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PERSONAL PROFILES

Dr. Jiang received his Ph.D. degree from the School of Energy and Power Engineering, Jiangsu University, China, in 2023. His research focuses on the use of theoretical (density functional theory, DFT) combined with experimental approaches to investigate biochar-catalyzed lignin monomeric model compounds to obtain high-value phenolic chemicals, and related chemical process machine learning algorithms. To date, he has published 20 peer-reviewed SCI-indexed articles covering biomass fraction pyrolysis mechanisms, biomass catalytic pyrolysis mechanisms, zeolite catalytic pyrolysis mechanisms, gas adsorption

materials, pollutant purification, and CO₂ conversion, and has served as a reviewer for many international peer-reviewed journals.

SKILLS

Python, Machine Learning, Density Functional Theory Calculation, Analytic skills combining experiment and theory, FTIR\NMR\UV-Vis spectrum fitting, BOMD, Gaussian.

EDUCATION

Doctor of Philosophy (Successive Postgraduate and Doctoral Programs)

2017.9~2023.6 School of Energy and Power Engineering, Jiangsu University, Zhenjiang, China.

Bachelor of Science

2012.9~2016.6 School of Energy and Power Engineering, Jiangsu University, Zhenjiang, China.

PUBLICATIONS

1. **Ding Jiang**, Hongping Li, Xiaoxue Cheng, Shuang Wang*, Abdelfatah Abomohra, and Bin Cao (2022). Activation of Nitrogen-Doped Carbon Materials on the C–N Bond and C–O Bond: Modeling Study Toward Enhanced Pyrolysis Products. **ACS Sustainable Chem Eng** 10, 7473- 7484. (SCI, IF = 7.1)
2. **Ding Jiang**, Shuang Wang*, Hongping Li, Lujiang Xu, Xun Hu, Bahram Barati, and Anqing Zheng (2021). Insight into the Mechanism of Glycerol Dehydration and Subsequent Pyridine Synthesis. **ACS Sustainable Chem Eng** 9, 3095-3103. (SCI, IF = 7.1, **Cover article**)
3. **Ding Jiang**, Jiancheng Li, Shuang Wang*, Hongping Li, Lili Qian, Bin Li, Xiaoxue Cheng, Yamin Hu, and Xun Hu (2020). Cyclic Compound Formation Mechanisms during Pyrolysis of Typical Aliphatic Acidic Amino Acids. **ACS Sustainable Chem Eng** 8, 16968-16978. (SCI, IF = 7.1)
4. **Ding Jiang**, Zhen Xia, Shuang Wang*, Hongping Li, Xun Gong, Chuan Yuan, Abd El-Fatah Abomohra, Bin Cao, Xun Hu, Zhixia He, et al. (2019). Mechanism research on catalytic pyrolysis of sulfated polysaccharide using ZSM-5 catalysts by Py-GC/MS and density functional theory studies. **J Anal Appl Pyrolysis** 143, 104680. (SCI, IF = 5.8)
5. **Ding Jiang**, Chuan Yuan, Xiaoxue Cheng, Shuang Wang*, Hongping Li, and Xuping Yang (2022). Study on the pyrolysis mechanism of unsaturated fatty acid: A combined density functional theory and experimental study. **International Journal of Energy Research** 46, 2029-2040. (SCI, IF = 4.3)
6. **Ding Jiang**, Hongping Li, Shuang Wang*, Xiaoxue Cheng, Pietro Bartocci, and Francesco Fantozzi.(2022). Insight the CO₂ adsorption onto biomass-pyrolysis derived char via experimental analysis coupled with DFT Calculation. **Fuel** 332, 125948. (SCI, IF = 6.7, **High Cited Paper**)

7. **Ding Jiang**, Yuting He, Jinrui Zhang, Jie Yin, Jing Ding, Shuang Wang*, Hongping Li (2023), Conjugate acid-base bi-functional polymeric ionic liquids (CAB-PILs) as efficient catalysts for CO₂ capture and subsequent glycidol cycloaddition reaction, **Journal of Molecular Liquids**, 375 121284. (SCI, IF = 5.3)
8. **Ding Jiang**, Hongping Li, Xiaoxue Cheng, Qifan Ling, Hao Chen, Bahram Barati, Quanfeng Yao, Abd El-Fatah Abomohra, Xun Hu, Pietro Bartocci, Shuang Wang*(2023), A mechanism study of methylene blue adsorption on seaweed biomass derived carbon: From macroscopic to microscopic scale, **Process Safety and Environmental Protection**, 172 1132-1143. (SCI, IF = 6.9, **High Cited Paper**)
9. **Ding Jiang**, Hongping Li, Xiaoxue Cheng, Abdelfatah Abomohra, Yamin Hu, Arman Amani Babadi, Pietro Bartocci, Xun Hu, Shuang Wang (2023). Chemical process of multiphase system in lignin-biochar co-pyrolysis for enhanced phenol recovery, **Fuel Processing Technology** 250: 107882. (SCI, IF = 7.5)
10. **Ding Jiang**, Xuping Yang, Arman Amani Babadi, Xiaoxue Cheng, Qifan Ling, Hongping Li, Sirong He , Bin Cao, Xun Hu, Shuang Wang*(2024), Study of the catalytic pyrolysis mechanism of guaiacol over seaweed-derived carbon catalyst: Based on density function theory and machine learning, **Fuel**, 369 131529. (SCI, IF = 6.7)
11. **Ding Jiang**, Hongping Li, Xiaoxue Cheng, Minggao Xu, Abdelfatah Abomohra, Yamin Hu, Arman Amani Babadi, Pietro Bartocci, Xun Hu, Shuang Wang (2024). Catalytic role of biochar surface groups in phenol formation from lignin pyrolysis: Experimental and DFT insights, **Chemical Engineering Journal** 689: 146196. (SCI, IF = 13.2)
12. **Ding Jiang**, Chenchen Li, Xiaoxue Cheng, Fuqiang Liu, Sivakumar Esakkimuthu, Shuang Wang, Anqing Zheng, Osvalda Senneca (2025). Optimizing Vanillin Production From Guaiacol-Type Precursors: An Integrated Experimental and Computational Approach, **ChemSusChem**: e202501683. (SCI, IF = 6.6).
13. Shuang Wang*, **Ding Jiang**, Bin Cao, Yamin Hu, Chuan Yuan, Qian Wang, Zhixia He, Chi-Wai Hui, Abd El-Fatah Abomohra, Xinlin Liu, et al. (2018). Study on the interaction effect of seaweed bio-coke and rice husk volatiles during co-pyrolysis. **J Anal Appl Pyrolysis** 132, 111-122. (SCI, IF = 5.8)
14. Shuang Wang*, **Ding Jiang**, Bin Cao, Lili Qian, Yamin Hu, Lu Liu, Chuan Yuan, Abd El-Fatah Abomohra, Zhixia He, Qian Wang, et al. (2018). Bio-char and bio-oil characteristics produced from the interaction of Enteromorpha clathrate volatiles and rice husk bio-char during co-pyrolysis in a sectional pyrolysis furnace: A complementary study. **J Anal Appl Pyrolysis** 135, 219-230. (SCI, IF = 5.8)
15. Chenchen Li, **Ding Jiang***, Xiaoxue Cheng, Hongping Li, Sirong He, Mao Mu, Bin Cao, Sivakumar Esakkimuthu, Shuang Wang*. Elucidating reaction mechanisms in the oxidative depolymerization of sodium lignosulfonate for

- enhancing vanillin production: A Density Functional Theory study. **J. Anal. Appl. Pyrolysis** 179 (2024) 106499. (SCI, IF = 5.8)
16. SHI Jingyuan, LI Chenchen, CHENG Xiaoxue, LING Qifan, MU Mao, WANG Shuang*, **JIANG Ding*** (2026). Reaction network database for fast pyrolysis of vanillyl alcohol based on molecular wavefunction descriptors (基于分子波函数描述符的香草醇快速热解反应网络数据库). **J Fuel Chem Technol**, 2026, 54, 20250400 (中文核心)
 17. Xiaoxue Cheng, **Ding Jiang**, Hao Chen, Bahram Barati, Chuan Yuan, Hongping Li, Shuang Wang. (2023). Multi-stage adsorption of methyl orange on the nitrogen-rich biomass-derived carbon adsorbent: DFT and MD evaluation. **Chemosphere**, 338, 139218. (SCI, IF = 8.1)
 18. Yuting He, **Ding Jiang**, Xue Li, Jing Ding, Hongping Li, Hui Wan, and Guofeng Guan (2021). Efficient fixation of CO₂ into carbonates by tertiary N-functionalized poly(ionic liquids): Experimental-theoretical investigation. **Journal of CO₂ Utilization** 44. (SCI, IF = 7.2)
 19. Bin Cao, **Ding Jiang**, Yijie Zheng, Parveen Fatemeh Rupani, Chuan Yuan, Yamin Hu, Hao Chen, Chao Li, Xun Hu, Shuang Wang*, Jianping Yuan, Abdelfatah Abomohra, Evaluation of biochar-derived carbocatalysts for pyrolytic conversion of sawdust: Life cycle assessment towards monophenol production, **Fuel** 2022,330, 125476. (SCI, IF = 6.7)
 20. Xuping Yang, **Ding Jiang**, Xiaoxue Cheng, Fatma Marrakchi, Chuan Yuan, Zhixia He, Shuang Wang*, Anqing Zheng, Nitrogen transfer mechanism research on the co- pyrolysis macroalgae with polyethylene, **Sustainable Energy Technologies and Assessments** 51 (2022) 101886. (SCI, IF = 7.1)
 21. Xiaoxue Cheng, **Ding Jiang**, Xun Hu, Bahram Barati, Yamin Hu, Lili Qian, Zhixia He, Shuang Wang*, Hongping Li, Mechanism of solvothermal conversion of xylose to furfural in rich-methanol solution: A study based on density functional theory, **J. Anal. Appl. Pyrolysis** 154 (2021) 104996. (SCI, IF = 5.8)
 22. Chenchen Li, **Ding Jiang**, Xuping Yang, Arman Amani Babadi, Shuang Wang, Xun Gong. Selective adsorption of carbonyl compounds from bio-oil by seaweed-derived carbon: A theoretical study. **J. Anal. Appl. Pyrolysis**, 173 (2023) 106092. (SCI, IF = 5.8)
 23. Xiaoxue Cheng, **Ding Jiang**, Bin Cao, Shuang Wang, Hongping Li, Bahram Barati, Zhen Xia, Jinsong Zhou, Shuang Wang*, Study on ZSM-5 catalytic pyrolysis mechanism of cellulose based on the Py-GC/MS and the density functional theory, **Combust. Flame** 241 (2022) 112131. (SCI, IF = 5.8)
 24. Chuan Yuan, **Ding Jiang**, Shuang Wang*, Bahram Barati, Xun Gong, Bin Cao, Ruiping Zhang, Chuang Zhang, Emmanuel A. Odey, Study on catalytic pyrolysis mechanism of seaweed polysaccharide monomer, **Combust. Flame** 218 (2020) 1-11. (SCI, IF = 5.8)
 25. Xuping Yang, **Ding Jiang**, Xiaoxue Cheng, Chuan Yuan, Shuang Wang*, Zhixia He, Sivakumar Esakkimuthu, Adsorption properties of seaweed-based biochar with the greenhouse gases (CO₂, CH₄, N₂O) through density functional theory (DFT), **Biomass Bioenergy** 163 (2022) 106519. (SCI, IF = 5.8)

Presentations at Conferences

22 Sep. 2022 Ding Jiang, Shuang Wang, Hongping Li, The role of free radicals in heterogeneous pyrolysis of guaiacol and carbon materials: based on theoretical methods, China National Symposium on Combustion, (Oral presentation).

24 Jul. 2021 Ding Jiang, Xiaoxue Cheng, Shuang Wang, Theoretical study on the activation of nitrogen-doped carbon materials on the C-N bond and C-O bond in biomass pyrolysis products, The 2st International Conference on Energy and Environment, (Oral presentation).

14 Jan. 2021 Xiaoxue Cheng, Ding Jiang, Shuang Wang, Hongping Li, Adsorption mechanism of methylene blue on nitrogen doped Graphene based on experiments and Density functional theory, China National Symposium on Combustion, (Oral presentation).

12 Nov. 2020 Ding Jiang, Zhen Xia, Hongping Li, Shuang Wang, et al. Study on Catalytic Pyrolysis Mechanism of Cellulose by Py GC/MS Combined with Density functional theory (DFT), China National Symposium on Combustion, (Poster presentation).

Academic Exchange

2024-2025 | **Jiangsu University** 🇨🇳 **STMES-CNR** | [Link](#)

Organized and facilitated an academic exchange visit between Chinese and Italian research teams, focusing on biomass pyrolysis and catalyst development, successfully advancing collaborative research efforts in the field.



Funds

1. **National Natural Science Foundation of China.** [No. 52406244] **(Host)**

2. **Natural Science Foundation of Jiangsu Province.** [BK20240862] **(Host)** 
3. **Postdoctoral Fellowship Program of CPSF.** [GZC20240613] **(Host)** 
4. **Jiangsu Funding Program for Excellent Postdoctoral Talent.** [No. 2024ZB771] **(Host)** 
5. **National Natural Science Foundation of China (NSFC):** A Fundamental Study of Enhanced Biomass Pyrolysis and Deoxygenation by Endogenous Nitrogen-Doped Algal Carbon Catalysts Research [No. 52176189] **(Participated, 4/10)**
6. **National Natural Science Foundation of China (NSFC):** Basic Research on Co-catalytic Pyrolysis of Macroalgae and Terrestrial Biomass Based on Component Interaction and Coupling Effects. Research [No. 51676091] **(Participated, 5/11)**
7. **National Natural Science Foundation of China (NSFC):** Studies on Ionic Liquid-Stabilized Boron Nitride Supported Single-Atom Adsorbent for Selective Desulfurization [No. 22078135] **(Participated, 3/9)**
8. **National Key R&D Program of China:** Research and development of technology for producing biodiesel and pharmaceutical intermediates from straw biomass [No. 2022YFE0207200] **(Participated, 12/25)**

AWARDS

- [1] National Scholarship for Master's Students (2019) 
- [2] Science and Technology Award of Jiangsu Province (2022) (9/9) 
- [3] Outstanding Doctoral Student Freshman Scholarship, Class A, 2019 (2019) 
- [4] Jiangsu University Graduate Scholarship, 1st Prize (2017-2018) 
- [5] Jiangsu University Graduate Scholarship, 3rd Prize (2018-2019) 
- [6] Jiangsu University Graduate Scholarship, 3rd Prize (2019-2020) 
- [7] Jiangsu University Graduate Scholarship, 2nd Prize (2020-2021) 
- [8] Jiangsu University Graduate Scholarship, 2nd Prize (2021-2022) 
- [9] "Jereh Cup" The Sixth China Postgraduate Energy Equipment Innovation Design Competition, Jiangsu University, 2nd Prize (2019) 
- [10] The 20th Energy Conservation and Emission Reduction Social Practice and Technology Competition of Jiangsu University, 1st Prize (2020) 

REVIEWER for SCI-INDEXED JOURNALS

Waste Management, Fuel, Chemical Engineering Journal, and Journal of Analytical and Applied Pyrolysis, Combustion and Flame, International journal of energy Research, Fuel Processing Technology

