

## 硕士研究生导师简介—左红艳

|                                                                                   |      |                                              |       |    |
|-----------------------------------------------------------------------------------|------|----------------------------------------------|-------|----|
|  | 姓 名  | 左红艳                                          | 职 称   | 教授 |
|                                                                                   | 学 历  | 博士/博士后                                       | 硕导/博导 | 硕导 |
|                                                                                   | 行政职务 | 无                                            |       |    |
|                                                                                   | 研究方向 | 动力电池系统热流协同优化控制；绿色能源装备可靠性分析与优化设计；低品位能源回收关键技术  |       |    |
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### 个人简介

#### 【个人简介】

左红艳，女，1975 年生，教授(博士/博士后)，硕士生导师，主要从事动力电池系统热流协同优化控制；绿色能源装备可靠性分析与优化设计；低品位能源回收关键技术等领域研究工作。近 10 年来，先后主持完成国家自然科学基金面上项目、湖南省自然科学基金面上项目、湖南省社会科学基金项目 and 湖南省高校创新平台开放基金项目，并参与武器装备预研重点基金项目、国家自然科学基金面上项目、国家“十二五”科技支撑计划项目等 6 项国家级和省部级科研项目。

#### 【课题成果】

- [1] 国家自然科学基金面上项目：风载荷作用下大功率碟式太阳能热发电系统动力学灾变特性及其抗灾变方法研究[52175135], 主持, 2022.01-2025.12.
- [2] 湖南省自然科学基金面上项目：车用锂离子动力电池系统热失控扩散机理辨识及其热安全性能协同优化研究[2025JJ50327], 主持, 2025.01-2027.12.
- [3] 湖南省自然科学基金湘潭联合基金项目：车用锂离子动力电池系统过热产气特性非线性辨识及其热安全灾变预警分析[2021JJ50019], 主持, 2021.01-2023.12.

#### 【论文著作】

发表学术论文 60 多篇，其中 SCI、EI 收录 40 余篇，主要代表作：

- [1] **Hongyan Zuo\***, Bin Zhang\*, Zhonghua Huang, Kexiang Wei, Hong Zhu, Jiqui Tan. Effect analysis on SOC values of the power lithium manganate battery during discharging process and its intelligent estimation. Energy, 2022, 238: 121854. Doi: 10.1016/j.energy.2021.121854. **SCI 1 区 IF: 9.0.**
- [2] **Hongyan Zuo**, Yun Zhu, Shitu Abubakar, Yuqiang Li\*. Effect of a crossed-semicircular-plate on thermal performance of micro-combustor fueled by premixed hydrogen-air mixture. International Journal of Hydrogen Energy, 2022, 47(39): 17442-17453. Doi: 10.1016/j.ijhydene.2022.03.212. 中科院分区 **SCI 2 区 IF: 7.139.**
- [3] **Hongyan Zuo**, Yun Zhu, Dongli Tan\*, Shuwan Cui, Jiqui Tan, Dingqing Zhong. Investigation on energy-effectiveness enhancement of medium-frequency induction furnace based on an adaptive chaos immune optimization algorithm with mutative scale. Processes, 2022, 10(3), 491; <https://doi.org/10.3390/pr10030491>. **SCI 3 区 IF: 3.352.**
- [4] **Hongyan Zuo**, Jingwei Liang, Bin Zhang\*, Kexiang Wei, Hong Zhu, Jiqui Tan. Intelligent

- estimation on state of health of lithium-ion power batteries based on failure feature extraction. *Energy*, 2023, 282: 128794. **SCI 1 区 IF: 9.0.**
- [5] **Hongyan Zuo\***, Jiqui Tan, Kexiang Wei\*, Zhonghua Huang, Dingqing Zhong, Fuchun Xie. Effects of different poses and wind speeds on wind-induced vibration characteristics of a dish solar concentrator system. *Renewable Energy*, 2021, 168: 1308-1326. 中科院分区 **SCI 1 区 IF: 8.634.**
- [6] **Hongyan Zuo\***, Guanlin Liu, Jiaqiang E\*, Wei Zuo, Kexiang Wei, Wenyu Hu, Jiqui Tan, Dingqing Zhong. Catastrophic analysis on the stability of a large dish solar thermal power generation system with wind-induced vibration. *Solar Energy*, 2019, 183: 40-49. 中科院分区 **SCI 2 区 IF: 7.188. ESI Highly Cited Papers**
- [7] Kexiang Wei, Yue Yang, **Hongyan Zuo\***, Dingqing Zhong. A review on ice detection technology and ice elimination technology for wind turbine. *Wind Energy*. 2020, 23(3): 433-457. Doi:10.1002/we.2427. 中科院分区 **SCI 2 区 IF: 3.125. ESI Highly Cited Papers**
- [8] Bin Zhang, **Hongyan Zuo\***, Zhonghua Huang, Jiqui Tan, Qingsong Zuo. Endpoint forecast of different diesel-biodiesel soot filtration process in diesel particulate filters considering ash deposition. *Fuel*, 2020, 271: 117678. <https://doi.org/10.1016/j.fuel.2020.117678>. 中科院分区 **SCI 1 区 IF: 8.035. ESI Highly Cited Papers**
- [9] Ying Ma, Xianzhi Wang, **Hongyan Zuo\***, Qingsong Zuo, Wei Chen, Wenliang Wei, Weiyi He. Mechanistic study of the N-doping enhancement in thermal performance of MOF-based composite phase change material and its application in lithium-ion battery heat dissipation. *Energy*, 2025, 320: 135202. **SCI 1 区 IF: 9.4.**
- [10] Libiao Wang, **Hongyan Zuo\***, Bin Zhang, Guohai Jia. Effects of supercritical carbon dioxide cooling on heat dissipation performance enhancement of a prismatic LiFePO<sub>4</sub> battery pack. *Energy*, 314: 134187. **SCI 1 区 IF: 9.4.**
- [11] Chao Zhong, Yuhao Su, Bo Chen, Guohai Jia, Shaoli Wang, **Hongyan Zuo\***. Investigation on synergistic performance enhancement of passive-active regeneration in catalytic diesel particulate filter. *Fuel*, 2025, 399: 135602. **SCI 2 区 IF: 7.5.**
- [12] Ying Ma, Rongrong Wei, **Hongyan Zuo\***, Qingsong Zuo, Xiaoyu Luo, Ying Chen, Shuying Wu, Wei Chen. N-doped EG@MOFs derived porous carbon composite phase change materials for thermal optimization of Li-ion batteries at low temperature. *Energy*, 2024, 286: 129637. **SCI 1 区 IF: 9.0.**
- [13] Libiao Wang, **Hongyan Zuo\***, Bin Zhang, Guohai Jia. Effects of the cold plate with airfoil fins on the cooling performance enhancement of the prismatic LiFePO<sub>4</sub> battery pack. *Energy*, 2024, 296: 131210. **SCI 1 区 IF: 9.0.**
- [14] Haoxuan Li, Long Chen, **Hongyan Zuo\***, Bin Zhang, Guohai Jia. Performance enhancement of a battery thermal management system using novel liquid cold plates with micro-channel featuring pin fins. *Energy*, 2024, 301: 131731. **SCI 1 区 IF: 9.0.**
- [15] Chao Zhong, Shaoli Wang, Bo Chen, Guohai Jia, Chenxi Wu, **Hongyan Zuo\***. Effect analysis on passive and active regeneration performance of catalytic diesel particulate filters

at the equilibrium point in the presence of ash layer. The Canadian Journal of Chemical Engineering. 2024, 102(10):3305-3672. **SCI 4 ☒ IF: 1.6.**

- [16] Duzhong Nie\*, Lin Chen, Fang Zhang, Hongyan Gao, Xian Zhu, **Hongyan Zuo**, Xinli Lu. Improvement in the photothermal conversion performance of a solar cavity receiver with concave spherical windows. Applied Thermal Engineering, 2024, 244: 122691. **SCI 2 ☒ IF: 6.1.**

- [17] Ying Ma, Rongrong Wei, **Hongyan Zuo\***, Qingsong Zuo, Ying Chen, Shuying Wu, Heng Yang. Development of Hierarchical MOF-based composite phase change materials with enhanced latent heat storage for low-temperature battery thermal optimization. Energy, 2023, 283: 129001. **SCI 1 ☒ IF: 9.0.**

- [18] Xiaohuan Zhao, Jiang Jiang, **Hongyan Zuo\***, Guohai Jia. Soot combustion characteristics of oxygen concentration and regeneration temperature effect on continuous pulsation regeneration in diesel particulate filter for heavy-duty truck. Energy, 2023, 264: 126265. **SCI 1 ☒ IF: 9.0.**

- [19] Xiaohuan Zhao, Jiang Jiang, **Hongyan Zuo\***, Zhengsong Mao. Performance analysis of diesel particulate filter thermoelectric conversion mobile energy storage system under engine conditions of low-speed and light-load. Energy, 2023, 282: 128411. **SCI 1 ☒ IF: 9.0.**

- [20] Ying Ma, Heng Yang, **Hongyan Zuo\***, Qingsong Zuo, Xiaoxiang He, Wei Chen, Rongrong Wei. EG@Bi-MOF derived porous carbon/lauric acid composite phase change materials for thermal management of batteries. Energy, 2023, 272: 127180. **SCI 1 ☒ IF: 9.0. ESI Highly Cited Papers**

- [21] Ying Ma, Heng Yang, **Hongyan Zuo\***, Yi Ma\*, Qingsong Zuo, Ying Chen, Xiaoxiang He, Rongrong Wei. Three-dimensional EG@MOF matrix composite phase change materials for high efficiency battery cooling. Energy, 2023, 278: 127798. **SCI 1 ☒ IF: 9.0.**

- [22] Yunfei Zha, Xianfeng Meng, Shuaishuai Qin, Nairen Hou, Shunquan He, Caiyuan Huang, **Hongyan Zuo**, Xiaohuan Zhao\*. Performance evaluation with orthogonal experiment method of drop contact heat dissipation effects on electric vehicle lithium-ion battery. Energy, 2023, 271: 127049. **SCI 1 ☒ IF: 9.0.**

- [23] Yunfei Zha, Shunquan He, Xianfeng Meng, **Hongyan Zuo**, Xiaohuan Zhao\*. Heat dissipation performance research between drop contact and immersion contact of lithium-ion battery cooling. Energy, 2023, 279: 128126. **SCI 1 ☒ IF: 9.0.**

- [24] Feng Yi, Jiaqiang E, Bin Zhang, **Hongyan Zuo\***, Kexiang Wei\*, Jingwei Chen, Hong Zhu, Hao Zhu, Yuanwang Deng. Effects analysis on heat dissipation characteristics of lithium-ion battery thermal management system under the synergism of phase change material and liquid cooling method. Renewable Energy, 2022, 181: 472-489. <https://doi.org/10.1016/j.renene.2021.09.073>. 中科院分区 **SCI 1 ☒ IF: 8.634.**

- [25] Yun Zhu, Siwei Liu, Kexiang Wei, **Hongyan Zuo**, Ronghua Du\*, Xiong Shu\*. A novel based-performance degradation Wiener process model for real-time reliability evaluation of lithium-ion battery. Journal of Energy Storage, 2022, 50: 104313. <https://doi.org/10.1016/j.est.2022.104313>. 中科院分区 **SCI 2 ☒ IF: 8.907.**

- [26] Xiaohuan Zhao, **Hongyan Zuo\***, Guohai Jia. Effect analysis on pressure sensitivity performance of diesel particulate filter for heavy-duty truck diesel engine by the nonlinear soot regeneration combustion pressure model. *Energy*, 2022, 257, 124766. <https://doi.org/10.1016/j.energy.2022.124766>. 中科院分区 **SCI 1 区 IF: 9.0**.
- [27] Xiaohuan Zhao, **Hongyan Zuo\***, Guohai Jia. Effects of the continuous pulsation regeneration on the soot combustion in diesel particulate filter for heavy-duty truck. *Chemosphere*, 2022, 306, 135651. <https://doi.org/10.1016/j.chemosphere.2022.135651>. 中科院分区 **SCI 2 区 IF: 8.943**.
- [28] Chao Zhong, Jingwei Liang, Yun Zhu, **Hongyan Zuo\***, Shaoli Wang, Bo Chen, Xin Wu, Chenxi Wu. Effects analysis on soot oxidation performance in the diesel particulate filter based on synergetic passive-active composite regeneration methods. *Chemical Engineering Science*, 2022, 262: 118013. 中科院分区 **SCI 2 区 IF: 4.311**.
- [29] Chao Zhong, Chengxi Wu, **Hongyan Zuo\***, Zhong Gu. Theoretical analyses of NH<sub>3</sub>-SCR reaction-mass transfer over Cu-ZSM-5. *Canadian Journal of Chemical Engineering*, 2022, 100: 3263–3269. <https://doi.org/10.1002/cjce.24341>. 中科院分区 **SCI 4 区 IF: 4.311**.

#### 【授权专利】

- [1] **左红艳**, 朱云, 谭季秋, 杨博. 一种空气净化器[P]. ZL 2022 1 0040025.9, 2023.05.
- [2] **左红艳**, 张彬, 贾国海, 陈海, 聂笃忠. 一种用于大型碟式太阳能热发电的抗风减振系统[P]. ZL 2025 1 0980070.6, 2025.09.
- [3] **左红艳**, 张彬, 贾国海, 陈海, 聂笃忠. 微粒捕集器多模态再生能耗优化控制方法及其系统, 2025-12-11, 中国, CN202511860650.8
- [4] **左红艳**, 张彬, 贾国海, 钟超. 基于风光捕获的一体式空气净化设备及其控制方法, 2023-05-26, 中国, 202310603764.9
- [5] **左红艳**, 张彬, 贾国海, 钟超, 聂笃忠, 陈海. 基于高速公路车辆行驶气流的风能收集与空气净化系统, 2026-01-29, 中国, 202610123587.8
- [6] 张彬, **左红艳**, 贾国海, 任丙, 肖尊奇. 锂离子电池相变热失控的智能预警方法, 2024-12-17, 中国, CN202411422710.3.
- [7] 贾国海, **左红艳**, 张彬, 马永佳. 一种竹材的热处理加工工艺及其在生物燃油方面的应用, 2024-12-06, 中国, CN202411356423.7.

#### 【荣誉奖励】

2023 年指导陈嘉琪等的作品“基于太阳能光伏驱动的光分解白色垃圾及其产物回收一体化装置”获“六百光年杯”第十五届**全国**大学生节能减排社会实践与科技竞赛三等奖；2023~2025 年指导本科生的作品 4 次获湖南省大学生节能减排社会实践与科技竞赛一等奖。

#### 【奖励情况】

- [1]曹秋菊, 王涛生, **左红艳**, 蔡振军, 李水平. 中国产业安全测算与维护及出口竞争新优势培育, 湖南省政府, 湖南省科技进步奖, 三等奖, 2020;
- [2]曾谊晖, **左红艳**, 胡江学, 刘海力, 谢雅, 杨超, 徐作栋, 刘湘冬, 陈旺. 凸显理实研一体化培养特色, 培育应用型高校工科专业技能型创新人才, 湖南省教育厅, 湖南省职业教育教

学成果奖, 三等奖, 2022;

[3]2015 年 1 月获中南大学优秀博士学位论文奖;

[4]第 1 作者发表的 SCI1 区论文“Effect analysis on SOC values of the power lithium manganate battery during discharging process and its intelligent estimation” 获湖南省首届自然科学优秀学术论文一等奖。

#### 【学术兼职】

兼任《Renewable Energy》、《Energy Conversion and Management》、《Applied Energy》、《Energy》、《Journal of Energy Storage》、《Fuel》、《Journal of Cleaner Production》和《Journal of Central South University》等国内外 20 多个期刊审稿专家。