

## 基本信息

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## 教育背景

2005.09-2009.06	哈尔滨工业大学，化学工程与技术专业，工学博士
2003.09-2005.07	哈尔滨工业大学，应用化学专业，工学硕士
1999.09-2003.07	哈尔滨工业大学，化学工程与工艺专业，工学学士

## 工作经历

2020.07-至今	北京理工大学化学与化工学院，长聘教授
2017.01-2020.07	北京理工大学化学与化工学院，预聘副教授
2013.07-2016.12	北京理工大学化工与环境学院/化学与化工学院，副教授
2009.09-2013.07	北京理工大学化工与环境学院，讲师

## 研究方向

1.	新型锂二次电池
2.	固体氧化物燃料电池
3.	锂硫电池
4.	电化学储能技术

## 荣誉奖励

1.	2018 年国家技术发明二等奖（第二完成人）
2.	2017 年教育部科技进步一等奖（第二完成人）

3.	
<b>承担项目</b>	
1.	柔性锂离子电池关键技术研究，军委科技委，2017.07~2018.06，30万，主持
2.	*****系统研究，总装备部，2015.07~2016.06，30万，主持
3.	*****技术研究，总装备部，2014.07~2015.06，40万，主持
4.	基于闪烧技术的全纳米结构 SOFC 的构筑及电化学行为研究，国家自然科学基金面上，2014.01~2017.12，79万，主持
5.	SOFC 质子导体电解质的低温闪烧过程与机理研究，北京高等学校“青年英才计划”，2013.06~2015.06，15万，主持
6.	基于 C5-C12 高性能燃料技术的合作研究，科技部国际合作，2012.07~2015.07，653万，参与
7.	*****电源系统技术，总装备部，2011.07~2016.06，480万，参与
8.	直接甲烷 SOFCs 三维梯度阳极 NiO-SLT/SLT 的制备及电化学性质的研究，国家自然科学基金青年项目，2011.01-2013.12，19万，主持
9.	*****策略研究，总装备部，2012.10-2013.06，20万，主持
10.	
<b>研究成果</b>	
<p>主要从事固体氧化物燃料电池、高比能量锂离子电池、锂硫电池等新型电池材料的研发及应用研究，先后主持了总装“863”课题3项，国家自然科学基金课题2项，参与科技部国际合作专项、总装“863”重大项目、企业横向课题多项，在 <i>Angew. Chem. Int. Ed.</i>、<i>Nano Lett.</i>、<i>J. Mater. Chem. A</i>、<i>Chem. Comm.</i>等期刊发表SCI论文68篇，获2017年度教育部科技进步一等奖及2018年度国家技术发明二等奖（第二完成人）。</p>	
1.	基于嵌入-转化反应耦合机制开发的新型锂离子电池正极材料，突破了现有正极材料的容量上限。
2.	开发了高安全性新体系 PBO 隔膜材料的制备方法，提高了电池耐热温度，保障了高比能量电池的安全可靠性。
3.	打通了高比能量全电池生产环节，解决了空间用高比能蓄电池特殊环境下容量、稳态加速、振动、冲击、寿命等一系列问题。
4.	开展了具有化学吸附与催化作用的锂硫电池正极载体设计、碳基功能性中间层、金属锂负极枝晶抑制及低电解液用量条件下的催化作用等

	研究工作，完成了具有良好循环稳定性及高比能量的锂硫电池单体的研制。
5.	在固体氧化物燃料电池领域，针对闪烧技术在 SOFC 制备过程中的应用开展研究，揭示了闪烧过程中的材料结构演变规律，发展了一种简便、快速的 SOFC 电解质制备方法；针对质子导体 SOFC 阴极材料氧还原动力学缓慢的科学问题，提出了钙钛矿材料本征结构的调控及异质界面的构筑策略，大幅提升了阴极材料的氧还原动力学性能。
<b>代表性论文</b>	
1.	Xiaodan Yu, Chao Sui, Rongzheng Ren, Jinshuo Qiao, Wang Sun, <b>Zhenhua Wang*</b> , Kening Sun. Construction of heterointerfaces with enhanced oxygen reduction kinetics for intermediate-temperature solid oxide fuel cells. <i>ACS Applied Energy Materials</i> , 2020, 3(1): 447-455;
2	Ruijian Li, Zhe Bai, Wenshuo Hou, Jinshuo Qiao, Wang Sun, Yu Bai, <b>Zhenhua Wang*</b> , KeningSun. Spinel-type bimetal sulfides derived from Prussian blue analogues as efficient polysulfides mediators for lithium-sulfur batteries. <i>Chinese Chemical Letters</i> , 2020, In Press.
3	Minjian Ma, Jinshuo Qiao, Xiaoxia Yang, Chunming Xu, Rongzheng Ren, Wang Sun, Kening Sun, <b>Zhenhua Wang*</b> . Enhanced stability and catalytic activity on layered perovskite anode for high-performance hybrid direct carbon fuel cells. <i>ACS Applied Materials &amp; Interfaces</i> , 2020, 12: 12938-12948;
4	Rongzheng Ren, <b>Zhenhua Wang*</b> , Xingguang Meng, Xinhua Wang, Chunming Xu, Wang Sun, Jinshuo Qiao, Wang Sun, Kening Sun. Tailoring the Oxygen Vacancy to Achieve Fast Intrinsic Proton Transport in a Perovskite Cathode for Protonic Ceramic Fuel Cells. <i>ACS Applied Energy Materials</i> , 2020, 3(5): 4914-22;
5	Rongzheng Ren, <b>Zhenhua Wang*</b> , Xingguang Meng, Chunming Xu, Jinshuo Qiao, Wang Sun, Wang Sun, Kening Sun. Boosting the electrochemical performance of Fe-based layered double perovskite cathodes by Zn <sup>2+</sup> doping for solid oxide fuel cells. <i>ACS Applied Materials &amp; Interfaces</i> , 2020, 12(21): 23959-67;
6	Minjian Ma, Xiaoxia Yang, Rongzheng Ren, Chunming Xu, Jinshuo Qiao, Wang Sun, Kening Sun, Zhenhua Wang. Honeycombed porous, size matching architecture for high-performance hybrid direct carbon fuel cell anode. <i>ACS Applied Materials &amp; Interfaces</i> , 2020, 12(27): 30411-30419;
7	Hui Liu, Daichong Peng, Tianye Xu, Kedi Cai*, Kening Sun, <b>Zhenhua Wang*</b> . Porous conductive interlayer for dendrite-free lithium metal battery. <i>Journal of Energy Chemistry</i> , 2021, 53: 412-418;
8	Fan Yang, Wang Sun, Yu Bai, Tianye Xu, Kedi Cai,* Huiqun Cai, Kening Sun, <b>Zhenhua Wang*</b> . Rational design of sandwich-like “gel-liquid-gel” electrolytes for dendrite-free lithium metal batteries. <i>Industrial &amp; Engineering Chemistry Research</i> . 2020, 59, 14207-14216;

9	Guangdong Li, Yunjie Gou, Jinshuo Qiao, Wang Sun, <b>Zhenhua Wang*</b> , Kening Sun*. Recent progress of tubular solid oxide fuel cell: From materials to applications. <i>Journal of power Sources</i> , 2020, 477, 228693
10	Minjian Ma, Xiaoxia Yang, Jinshuo Qiao, Wang Sun, <b>Zhenhua Wang*</b> , Kening Sun. Progress and challenges of carbon-fueled solid oxide fuel cells anode. <i>Journal of Energy Chemistry</i> . 2021, 56, 209-222;
11	刘鑫, 冯平丽, 侯文烁, 王振华*, 孙克宁, 锂硫电池中间层的研究进展. 化工学报. 2020, 71(9): 4031-4045;
12	白哲, 李睿健, 侯文烁, 李海军, 王振华*, 双金属硫化物 CuCo <sub>2</sub> S <sub>4</sub> 的合成及其在锂硫电池中的应用. 化工学报. 2020, 71(9): 4282-4291;
13	Jing Zhang, Zhenhua Wang*, Taizhi Jiang, Liqiang Xie, Chao Sui, Rongzheng Ren, Jinshuo Qiao, Kening Sun*. Densification of 8mol% yttria-stabilized zirconia at low temperature by flash sintering technique for solid oxide fuel cells. <i>Ceramics International</i> , 2019, 43:14037-14043;
14	Chengyi Lu, Guang Pan, Qiaogao Huang, Haitao Wu, Wang Sun, <b>Zhenhua Wang*</b> and Kening Sun*. Polynitroxide-grafted-graphene: a superior cathode for lithium ion batteries with enhanced charge hopping transportation. <i>Journal of Materials Chemistry A</i> , 2019, 7: 4438;
15	Rongzheng Ren, <b>Zhenhua Wang*</b> , Chunming Xu, Wang Sun, Jinshuo Qiao, David W. Rooney, Kening Sun*. Tuning the defects of the triple conducting oxide BaCo <sub>0.4</sub> Fe <sub>0.4</sub> Zr <sub>0.1</sub> Y <sub>0.1</sub> O <sub>3-d</sub> perovskite toward enhanced cathode activity of protonic ceramic fuel cells. <i>Journal of Materials Chemistry A</i> , 2019, 7: 18365;
16	Chengyi Lu, Chen Dong, Haitao Wu, Dan Ni, Wang Sun, <b>Zhenhua Wang*</b> and Kening Sun*. Achieving high capacity hybrid-cathode FeF <sub>3</sub> @Li <sub>2</sub> C <sub>6</sub> O <sub>6</sub> /rGO based on morphology control synthesis and interface engineering. <i>Chemical Communications</i> , 2018, 54(26), 3235-3238;
17	王振华, 彭代冲, 孙克宁. 锂离子电池隔膜材料研究进展, 化工学报, 2018, 69(1), 282-294;
18	Yuxiang Yang, Yiren Zhong, Qiuwei Shi, <b>Zhenhua Wang*</b> , Kening Sun*, Hailiang Wang*. Electrocatalysis in Lithium Sulfur Batteries under Lean Electrolyte Conditions. <i>Angew. Chem. Int. Ed.</i> 2018, 57, 15549-15552
19	Yuxiang Yang, <b>Zhenhua Wang*</b> , Taizhi Jiang, Chen Dong, Zhu Mao, Chengyi Lu, Wang Sun and Kening Sun*. A heterogenized Ni-doped zeolitic imidazolate framework guide efficient trapping and catalytic conversion toward polysulfides for greatly improved lithium-sulfur batteries, <i>Journal of Materials Chemistry A</i> , 2018, 6, 13593-13598;
20	Chengyi Lu, David W. Rooney, Xiong Jiang, Wang Sun, <b>Zhenhua Wang*</b> , Jiajun Wang, Kening Sun*. Achieving high specific capacity of lithium-ion battery cathode by modification with “N-O” radicals oxygen-containing functional groups, <i>Journal of Materials Chemistry A</i> , 2017, 5, 24636-24644;
21	Yuxiang Yang, <b>Zhenhua Wang*</b> , Guangdong Li, Taizhi Jiang, Yujin Tong, Xinyang Yue, Jing Zhang, Zhu Mao, Wang Sun, Kening Sun*. Inspired by the “tip effect”: a novel structural design strategy for the cathode in advanced lithium-sulfur batteries, <i>Journal of Materials Chemistry A</i> , 2017, 5, 3140-3144;
22	<b>Zhenhua Wang</b> , Xiaodong Wang, Wang Sun, Kening Sun*. Dendrite-free lithium metal anodes in high performance lithium-sulfur batteries with

	bifunctional carbon nanofiber interlayers. <i>Electrochimica Acta</i> , 2017, 252, 127-137;
23	Xiaoming Hao, Jian Zhu*, Xiong Jiang, Haitao Wu, Jinshuo Qiao, Wang Sun, <b>Zhenhua Wang*</b> , Kening Sun*. Ultrastrong polyoxazole nanofiber membranes for dendrite-proof and heat-resistant battery separators, <i>Nano Letters</i> , 2016, 16(5): 2981~2987;
24	<b>Zhenhua Wang</b> , Jing Zhang, Yuxiang Yang, Xinyang Yue, Xiaoming Hao, Wang Sun, David Rooney, Kening Sun. Flexible carbon nanofiber /polyvinylidene fluoride composite membranes as interlayers in high-performance Lithium-Sulfur batteries. <i>Journal of Power Sources</i> , 2016, 329, 305-313;
25	Kening Sun, Jing Zhang, Taizhi Jiang, Jinshuo Qiao, Wang Sun, David Rooney, <b>Zhenhua Wang*</b> . Flash-Sintering and Characterization of $\text{La}_{0.8}\text{Sr}_{0.2}\text{Ga}_{0.8}\text{Mg}_{0.2}\text{O}_{3-\delta}$ Electrolytes for Solid Oxide Fuel Cells, <i>Electrochimica Acta</i> , 2016, 196, 487-495.