中国计量大学新增博士研究生指导教师申请表

申请一级学科：光学工程

除表中另有说明外，所填报各项与时间相关的内容均截至 2021 年 12 月 30 日，“近五年”的统计时间为 2017 年 1 月 1 日至 2021 年 12 月 30 日。

一、基本情况

姓名	马廷丽	**性别**	女	**出生年月**	1962.01
高层次人才		光学工程申博学术骨干 **浙江省千人计划** 化学学科学术带头人		**联系方式**	13940995799
最高学位及授予单位		日本，九州大学			
最高学历，毕业时间，毕业单位		1999.3.日本九州大学			
职称，获得职称年月		教授，2007.6			
目前所在学院和一级学科		材料与化学学院，应用化学学科			
主要研究方向		光电功能材料，光电器件，金属二次电池，CO_2电催化还原			

主要学习和工作经历，从研究生开始			
自何年月	**至何年月**	**单位**	**学习或工作**
1993.04	1996.03	日本九州大学　理学部	硕士研究生
1996.04	1999.03	日本九州大学　理学部	博士研究生
2013.6	2018.6	日本九州工业大学 生命体工学科	**教授/博导 (2013 年 6 月取得博导资格)**
2007.1	2018.12	大连理工大学 化学学院	**教授/博导 (2007 年 1 月取得博导资格)**
2019.1	至今	中国计量大学 材料与化学学院	教授

二、指导研究生情况

序号	年级	研究生姓名 （层次）	本人担任的 主要工作	研究生培养单位	学院 审核人
1	2018 级	杨树章 于凤阳 （博士生）	第一指导教师	日本九州工业大学	

2	2016 级	张楚，许振华（博士生）	第一指导教师	日本九州工业大学	
3	2018 级	孟凡宁（博士生）	第一指导教师	大连理工大学	
4	2019 级	孙磊，叶王翔（硕士生）	第一指导教师	中国计量大学	

三、近五年立项主持的代表性科研项目

项目名称及编号	项目来源（项目类型）	起止时间	合同经费（万元）	本人排名/总人数	学院审核人
金属离子掺杂对改善钙钛矿太阳能电池效率和稳定性机理的系统研究/编号 51972293	国家自然科学基金（面上项目）	2020.01.01—2023.12.31	60	1/3	
无铅铁电偶极子光电转换器件的新材料探索及机理研究/编号 51772039	国家自然科学基金（面上项目）	2018.01.01—2021.12.31	60	1/3	
近五年到账科研总经费（以计财处到账为准）：			60（万元）		

四、近五年发表的代表性学术论文

序号	论文名称	刊物名称	发表时间	SCI（中科院发表当年度分区）、SSCI 收录	本人排名/总人数	学院审核人
1	Recent Progress in MXene-Based Materials: Potential High-Performance Electrocatalysts	Advanced Functional Materials	2020.07	SCI(一区)	10/10 通讯作者	
2	9,10Anthraquinone/$K_2CuFe(CN)_6$:A Highly Compatible Aqueous Aluminum-Ion Full-Battery Configuration	ACS Appl. Mater. Interfaces	2021.02	SCI(一区)	9/11 通讯作者	
3	A review on electrochemical synthesized copper-based catalysts for electrochemical reduction of CO_2 to C^{2+} products	Chemical Engineering Journal	2021.02	SCI(一区)	3/3 通讯作者	
4	Current progress in electrocatalytic carbon dioxide reduction to fuels on heterogeneous catalysts	Journal of Materials Chemistry A	2020.01	SCI(一区)	10/10 通讯作者	
5	Interface engineering of transitional metal sulfide-MoS_2 heterostructure composites as effective electrocatalysts for water-splitting	Journal of Materials Chemistry A	2020.11	SCI(一区)	7/7 通讯作者	

6	Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery	Carbon	2021.11	SCI(一区)	8*/8（通讯作者）	
7	Recent Progress in Perovskite Solar Cells Modified by Sulfur Compounds	Sol. RRL	2021.2	SCI(一区)	7*/7（通讯作者）	
8	Over 23% power conversion efficiency of planar perovskite solar cells via bulk heterojunction design	Chemical Engineering Journal	2021.8	SCI(一区)	10*/10（通讯作者）	
9	Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries	Journal of Power Sources	2022.5	SCI(一区)	7*/7（通讯作者）	
10	Simulated Solar Light-driven Photothermal Preferential Oxidation of Carbon Monoxide in H_2-rich Streams over Fast-synthesized $CuCeO_{2-x}$ Nanorods	Applied Catalysis B: Environmental	2022.3	SCI(一区)	6*/6（通讯作者）	

五、近五年出版的学术专著

序号	专著名称	出版社名称，时间	本人排名/总人数	学院审核人
1				

六、近五年获省部级及以上科研成果奖

序号	获奖名称	授予单位，获奖等级，时间	本人排名/总人数	学院审核人
1	自然科学一等奖	河北省科技厅	2/3	
2				

七、近五年授权发明专利

序号	专利名称（国别及专利号）	授权时间	技术转让到账经费（万元）	本人排名/总人数	学院审核人
1	一种用于氮硼掺杂碳纤维及复合电极制备的浆料稳定剂	20210319	/	6/8	
2	一种泡沫导电网为载体合成硅电极的制备工艺	20210910	/	3/6	
3	一种泡沫导电网/硅负极材料制备装置及控制方法	20210910	/	3/6	
近五年专利技术转让到校总经费：			（万元）		

八、近五年主持制定并颁布实施的规程/规范/标准

序号	成果名称（编号）	发布单位	发布时间及类别	本人排名/总人数）	学院审核人
1					
2					
3					

九、近五年获正省（部）级及以上领导肯定性批示

序号	成果名称	批示领导及职务	批示时间（采用时间）	本人排名/作者人数	学院审核人
1					
2					
与学位授权点学科方向契合的成果（至少填一项）		第三项，第 1 条 第三项，第 2 条 第四项，第 7 条		第四项，第 8 条 第四项，第 10 条 第六项，第 1 条	

本人以上填写内容真实性、准确性无误，工作中未有学术不端行为，自觉践行“四个统一”，做学生成长成才的指导者和引路人。

申请人签名：　　　　　　年　　月　　日

申请人所在学院、党委审核推荐意见（明确填写是否符合博士生导师任职资格条件，是否同意推荐）：

院长签名：　　　　（学院盖章）　　　　党委书记签名：　　　　（党委盖章）

年　　月　　日　　　　　　　　年　　月　　日

学科委员会	应到委员人数	实到委员人数	同意票数	反对票数	弃权票数

<table>
<tr><td>意见</td><td colspan="5">是否推荐：是☐　否☐　　委员会主任签名：　　　　　　年　　月　　日</td></tr>
<tr><td colspan="6">研究生院复核意见：
（研究生院盖章）
分管领导签名：　　　　　　年　　月　　日</td></tr>
<tr><td rowspan="2">校外专家评审结果</td><td>评审专家数</td><td>强烈推荐</td><td>推荐</td><td>一般推荐</td><td>不推荐</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">校学科建设委员会意见</td><td>应到委员人数</td><td>实到委员人数</td><td>同意票数</td><td>反对票数</td><td>弃权票数</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="5">是否通过：是☐　否☐　　委员会主任签名：　　　　　　年　　月　　日</td></tr>
<tr><td colspan="6">学校意见：
（签章）
年　　月　　日</td></tr>
</table>

佐 证 材 料

一、近五年立项主持的代表性科研项目，包括：合同首页、参加人员页、经费页、签名盖章页。

二、近五年发表的代表性学术论文，包括：检索证明（需包含作者信息、期刊信息、发表时间、论文发表当年的中科院分区）、封面、目录、正文首页、刊号。

三、近五年出版的学术专著，包括：封面、目录、相关内容。

四、近五年获省部级及以上科研成果奖：获奖证书。

五、近五年授权发明专利：专利证书，专利有效证明。

六、近五年主持制定并颁布实施的规程/规范/标准：相关材料全文。

七、近五年获省（部）级正职以上领导肯定性批示：相关材料全文。

八、学校引育的高层次人才和申报新增博士点时各学科方向学术带头人、学术骨干：相关证明材料。

马廷丽博导资格证明

学院首页 | 学院概况 | 机构设置 | 教学科研 | 师资队伍 | 党群工作 | 招生就业 | 学生天地 | 人才招聘 | 交流合作 | 资料下载

教师信息

· 马廷丽　　您的位置： 学院首页>教师信息>化学工程>马廷丽

- 教师信息
  - 化学工程
  - 化学工艺
  - 生物化工
  - 应用化学
  - 无机化学
  - 分析化学
  - 有机化学
  - 物理化学
  - 化工机械
  - 实验中心

马廷丽教授

马廷丽

院系：	石油化工与工程学院
办公电话：	0427-2631818
电子信箱：	tinglima@dlut.edu.cn
更新时间：	2015.02.28
其他专业：	应用化学物理化学

个人简介

理学博士，教授，博士生导师。1992年留日，获日本九州大学理学博士学位。之后任日本科学技术厅事业团（JST)国家重点研究特聘博士后研究员，后就职于日本产业技术综合研究所(AIST)九洲中心任研究员。自2004年6月在日本九州大学大学院理学研究院任教，同时兼任九州大学高等教育综合研究开发中心的助教授。在日期间曾任英国皇家学院(Imperial College London)和美国加洲理工学院(Caltech)访问学者。2007年1月被大连理工大学化工学院精细化工国家重点实验室聘为教授，博士导师。

社会兼职

日本分析化学学会九州支部常务理事，现任理事。

中国留日学者、技术人员九州联谊会理事。

美国化学学会会员，日本化学学会、日本分析化学学会、日本光化学协会会员。

中国微细加工技术理事会理事

中国能源学会理事

中国仪器仪表< 功能材料>协会理事

http://pjpce.dlut.edu.cn/jsxx/hxgc/mtl.htm

https://clxy.cjlu.edu.cn/szdw/gccrc.htm

师资队伍

师资简介

高层次人才

教授风采

教师名录

校外导师

人才招聘

教师教学发展中心

高层次人才

材料学院高层次人才一览表

人才类型	姓名	研究方向
国家级人才	王天根	装甲材料
	何建伟	富勒烯材料
浙江省长期创新人才	马廷丽	太阳能电池与光催化
浙江省“151”人才重点资助	葛洪良	磁性材料

浙江省特聘专家

证书

中共浙江省委人才工作领导小组

浙江省海外高层次人才引进计划

浙江省特聘专家

证书

授予 马廷丽 先生／女士

浙江省特聘专家称号。

特颁此证

中共浙江省委人才工作领导小组办公室

办公室

国家自然科学基金资助项目批准通知

马廷丽　　先生/女士：

根据《国家自然科学基金条例》和专家评审意见，国家自然科学基金委员会（以下简称自然科学基金委）决定批准资助您的申请项目。项目批准号：51972293，项目名称：金属离子掺杂对改善钙钛矿太阳能电池效率和稳定性机理的系统研究，直接费用：60.00万元，项目起止年月：2020年01月至 2023年 12月，有关项目的评审意见及修改意见附后。

请尽早登录科学基金网络信息系统（https://isisn.nsfc.gov.cn），获取《国家自然科学基金资助项目计划书》（以下简称计划书）并按要求填写。对于有修改意见的项目，请按修改意见及时调整计划书相关内容；如对修改意见有异议，须在电子版计划书报送截止日期前向相关科学处提出。

电子版计划书通过科学基金网络信息系统（https://isisn.nsfc.gov.cn）上传，依托单位审核后提交至自然科学基金委进行审核。审核未通过者，返回修改后再行提交；审核通过者，打印纸质版计划书（一式两份，双面打印），依托单位审核并加盖单位公章后报送至自然科学基金委项目材料接收工作组。电子版和纸质版计划书内容应当保证一致。向自然科学基金委提交和报送计划书截止时间节点如下：

1. 提交电子版计划书截止时间为**2019年9月11日16点**（视为计划书正式提交时间）；

2. 提交电子修改版计划书截止时间为**2019年9月18日16点**；

3. 报送纸质版计划书截止时间为**2019年9月26日16点**。

请按照以上规定及时提交电子版计划书，并报送纸质版计划书，未说明理由且逾期不报计划书者，视为自动放弃接受资助。

附件：项目评审意见及修改意见表

国家自然科学基金委员会

2019年8月16日

附件：项目评审意见及修改意见表

项目批准号	51972293	项目负责人	马廷丽	申请代码1	E0210
项目名称	金属离子掺杂对改善钙钛矿太阳能电池效率和稳定性机理的系统研究				
资助类别	面上项目		亚类说明		
附注说明					
依托单位	中国计量大学				
直接费用	60.00 万元		起止年月	2020年01月 至 2023年12月	

通讯评审意见:

<1>具体评价意见:

一、请针对创新点详细评述申请项目的创新性、科学价值以及对相关领域的潜在影响。

本项目拟开展“金属离子掺杂对改善钙钛矿太阳能电池效率和稳定性机理的系统研究”工作。项目设计一系列不同价态和不同离子半径的具有代表性的金属离子，对全无机钙钛矿和无机有机复合钙钛矿进行掺杂。

创新性较强，有重要科学研究价值或应用前景，申请书各方面均较好。

二、请结合申请项目的研究方案与申请人的研究基础评述项目的可行性。

项目研究掺杂离子对钙钛矿晶格结构和结晶相稳定性的影响。研究由于离子掺杂对材料的半导体性质影响，研究材料的结构及性质的变化对光电器件性能和稳定性的影响。并利用原位和在线测试手段及第一性原理计算，在原子及分子水平上阐明由于离子掺杂，对钙钛矿晶格结构以及晶格膨胀等影响，揭示其构效关系。

项目的研究方案逻辑合理，申请人的研究基础较好，项目的可行性较强。

三、其他建议

无。

<2>具体评价意见:

一、请针对创新点详细评述申请项目的创新性、科学价值以及对相关领域的潜在影响。

本项目设计不同价态和不同离子半径的一系列金属离子对钙钛矿材料进行掺杂，研究离子掺杂后钙钛矿结构的变化以及改变其稳定性和性能的机理，钙钛矿结构和器件光电转化效率的构效关系等关键科学问题，在原子及分子水平上阐明其机理，为构建高稳定性可高效率的钙钛矿太阳能电池奠定坚实可靠的科学基础。申请人拟开展的金属离子掺杂对改善钙钛矿太阳能电池效率和稳定性机理的系统研究具有一定的科学意义和重要的应用前景，创新性强，为构建高稳定性和高效率的钙钛矿太阳能电池奠定坚实可靠的科学基础。

二、请结合申请项目的研究方案与申请人的研究基础评述项目的可行性。

申请人长期纳米功能材料开发以及在染料敏化及钙钛矿光电器件的相关研究，积累了丰富的经验。针对钙钛矿太阳能电池进入产业化所面临的稳定性问题，结合前期研究工作发现离子掺杂在提高器件的性能及稳定性方面的重要作用，开展了离子掺杂钙钛矿的系统研究，研究内容设置恰当，总体研究方案合理可行，前期发表了大量高水平研究论文，建议优先资助。

三、其他建议

<3>具体评价意见:

一、请针对创新点详细评述申请项目的创新性、科学价值以及对相关领域的潜在影响。

钙钛矿结构太阳能材料是近年来的研究热点，其稳定性是制约材料走向实际应用的关键难点。本申请针对该问题，提出系统研究离子掺杂对材料性能的影响规律，选题恰当。

二、请结合申请项目的研究方案与申请人的研究基础评述项目的可行性。

申请人有很好的工作基础和科研经验，能够胜任相关科研工作。

三、其他建议

无

修改意见:

工程与材料科学部

2019年8月16日

项目批准号	51972293
申请代码	E0210
归口管理部门	
依托单位代码	31001808A1235-2318

5 1972293 1004372

国家自然科学基金委员会

资助项目计划书

资助类别：面上项目

亚类说明：

附注说明：

项目名称：金属离子掺杂对改善钙钛矿太阳能电池效率和稳定性机理的系统研究

直接费用：60万元　　执行年限：2020.01-2023.12

负　责　人：马廷丽

通讯地址：浙江省杭州市江干区学源街258号 中国计量大学 材料科学与工程学院

邮政编码：310018　　电　　话：0571-86875607

电子邮件：tinglima6@gmail.com

依托单位：中国计量大学

联　系　人：韩亮　　电　　话：0571-87676317

填表日期：2019年08月21日

国家自然科学基金委员会制

Version：1.004.372

简表

<table>
<tr><td rowspan="6">申请者信息</td><td>姓　　名</td><td>马廷丽</td><td>性 别</td><td>女</td><td>出生年月</td><td>1962年01月</td><td>民 族</td><td>汉族</td></tr>
<tr><td>学　　位</td><td colspan="3">博士</td><td>职称</td><td colspan="3">教授</td></tr>
<tr><td>是否在站博士后</td><td colspan="2">否</td><td colspan="2">电子邮件</td><td colspan="3">tinglima6@gmail.com</td></tr>
<tr><td>电　　话</td><td colspan="2">0571-86875607</td><td colspan="2">个人网页</td><td colspan="3">http://finechem.dlut.edu.cn/matingli/</td></tr>
<tr><td>工 作 单 位</td><td colspan="7">中国计量大学</td></tr>
<tr><td>所 在 院 系 所</td><td colspan="7">材料科学与工程学院</td></tr>
<tr><td rowspan="3">依托单位信息</td><td>名　　称</td><td colspan="5">中国计量大学</td><td>代码</td><td>31001808A1235</td></tr>
<tr><td>联 系 人</td><td colspan="2">韩亮</td><td colspan="2">电子邮件</td><td colspan="3">hl@cjlu.edu.cn</td></tr>
<tr><td>电　　话</td><td colspan="2">0571-87676317</td><td colspan="2">网站地址</td><td colspan="3">www.cjlu.edu.cn</td></tr>
<tr><td rowspan="2">合作单位信息</td><td colspan="8">单 位 名 称</td></tr>
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<tr><td rowspan="7">项目基本信息</td><td>项 目 名 称</td><td colspan="7">金属离子掺杂对改善钙钛矿太阳能电池效率和稳定性机理的系统研究</td></tr>
<tr><td>资 助 类 别</td><td colspan="4">面上项目</td><td>亚 类 说 明</td><td colspan="2"></td></tr>
<tr><td>附 注 说 明</td><td colspan="7"></td></tr>
<tr><td>申 请 代 码</td><td colspan="4">E0210:无机非金属能量转换与存储材料</td><td colspan="3">B0510:能量转换材料化学</td></tr>
<tr><td>基 地 类 别</td><td colspan="7"></td></tr>
<tr><td>执 行 年 限</td><td colspan="7">2020.01-2023.12</td></tr>
<tr><td>直 接 费 用</td><td colspan="7">60万元</td></tr>
</table>

项目组主要成员

编号	姓名	出生年月	性别	职称	学位	单位名称	电话	证件号码	项目分工	每年工作时间（月）
1	马廷丽	1962.01	女	教授	博士	中国计量大学	0571-86875607	210102196201044726	项目负责人	8
2	张楚	1987.09	男	讲师	博士	中国计量大学	15641708816	21080319870930051x	器件的组建和性能评价	10
3	孟宪赫	1989.01	男	讲师	博士	中国计量大学	18811347266	372930198901107710	材料合成及性质研究	6
4	朱宇莹	1994.10	女	硕士生	学士	中国计量大学	15757163584	331003199410220020	器件测试	10
5	钱笑笑	1994.11	女	硕士生	学士	中国计量大学	15957121396	412726199411166285	材料合成	10
6	李婷	1994.02	女	硕士生	学士	中国计量大学	15957121513	510181199402184645	材料合成	10
7	张佳颖	1996.08	女	硕士生	学士	中国计量大学	17857141458	330721199608053328	材料合成	10

总人数	高级	中级	初级	博士后	博士生	硕士生
7	1	2	0			4

国家自然科学基金项目直接费用预算表 （定额补助）

项目批准号： 51972293　　　项目负责人：马廷丽　　　金额单位：万元

序号	科目名称	金额
1	项目直接费用合计	60.0000
2	1、 设备费	5.0000
3	(1)设备购置费	5.00
4	(2)设备试制费	0.0000
5	(3)设备升级改造与租赁费	0.0000
6	2、 材料费	15.0000
7	3、 测试化验加工费	11.0000
8	4、 燃料动力费	4.0000
9	5、 差旅/会议/国际合作与交流费	6.00
10	6、 出版/文献/信息传播/知识产权事务费	4.00
11	7、 劳务费	12.00
12	8、 专家咨询费	3.00
13	9、 其他支出	0.0000

国家自然科学基金资助项目签批审核表

<table>
<tr><td colspan="2">我接受国家自然科学基金的资助，将按照申请书、项目批准意见和计划书负责实施本项目（批准号：51972293），严格遵守国家自然科学基金委员会关于资助项目管理、财务等各项规定，切实保证研究工作时间，认真开展研究工作，按时报送有关材料，及时报告重大情况变动，对资助项目发表的论著和取得的研究成果按规定进行标注。

项目负责人（签章）：
年 月 日</td><td>我单位同意承担上述国家自然科学基金项目，将保证项目负责人及其研究队伍的稳定和研究项目实施所需的条件，严格遵守国家自然科学基金委员会有关资助项目管理、财务等各项规定，并督促实施。

依托单位（公章）
年 月 日</td></tr>
<tr><td rowspan="2">本栏目由基金委填写</td><td colspan="2">科学处审查意见：

建议年度拨款计划（本栏目为自动生成，单位：万元）：
<table><tr><td>年度</td><td>总额</td><td>第一年</td><td>第二年</td><td>第三年</td><td>第四年</td><td>第五年</td></tr><tr><td>金额</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>
负责人（签章）：
年 月 日</td></tr>
<tr><td colspan="2">科学部审查意见：

负责人（签章）：
年 月 日</td></tr>
<tr><td rowspan="2">本栏目主要用于重大项目等</td><td colspan="2">相关局室审核意见：

负责人（签章）：
年 月 日</td></tr>
<tr><td colspan="2">委领导审批意见：

委领导（签章）：
年 月 日</td></tr>
</table>

关于国家自然科学基金资助项目批准及有关事项的通知

马廷丽　先生/女士：

根据《国家自然科学基金条例》的规定和专家评审意见，国家自然科学基金委员会（以下简称自然科学基金委）决定批准资助您的申请项目。项目批准号：51772039，项目名称：无铅铁电偶极子光电转换器件的新材料探索及机理研究，直接费用：60.00万元，项目起止年月：2018年01月至 2021年 12月，有关项目的评审意见及修改意见附后。

请尽早登录科学基金网络信息系统（https://isisn.nsfc.gov.cn），获取《国家自然科学基金资助项目计划书》（以下简称计划书）并按要求填写。对于有修改意见的项目，请按修改意见及时调整计划书相关内容；如对修改意见有异议，须在计划书电子版报送截止日期前提出。**注意：请严格按照《国家自然科学基金资助项目资金管理办法》填写计划书的资金预算表，其中，劳务费、专家咨询费科目所列金额与申请书相比不得调增。**

计划书电子版通过科学基金网络信息系统（https://isisn.nsfc.gov.cn）上传，由依托单位审核后提交至自然科学基金委进行审核。审核未通过者，返回修改后再行提交；审核通过者，打印为计划书纸质版（一式两份，双面打印），由依托单位审核并加盖单位公章后报送至自然科学基金委项目材料接收工作组。计划书电子版和纸质版内容应当保证一致。

向自然科学基金委提交和报送计划书截止时间节点如下：

1、提交计划书电子版截止时间为**2017年9月11日16点**（视为计划书正式提交时间）；

2、提交计划书电子修改版截止时间为**2017年9月18日16点**；

3、报送计划书纸质版截止时间为**2017年9月26日16点**。

请按照以上规定及时提交计划书电子版，并报送计划书纸质版，未说明理由且逾期不报计划书者，视为自动放弃接受资助。

附件：项目评审意见及修改意见表

国家自然科学基金委员会
工程与材料科学部
2017年8月17日

附件：项目评审意见及修改意见表

项目批准号	51772039	项目负责人	马廷丽	申请代码1	E021001
项目名称	无铅铁电偶极子光电转换器件的新材料探索及机理研究				
资助类别	面上项目		亚类说明		
附注说明	常规面上项目				
依托单位	大连理工大学				
直接费用	60.00 万元		起止年月	2018年01月 至 2021年12月	

通讯评审意见:

<1> 研究有效提高有机无机复合钙钛矿型太阳能电池的光电转换效率是当前光伏领域的热点研究课题，申请者通过第一性原理和密度泛涵理论计算来筛选新型铁电材料，研究光伏铁电材料的组成和结构对电子结构及光学性能的影响，研究新型铁电材料结构与光电器件的关系，研究提高光电转化效率的途径和机制。作者详细分析了目前国内外研究的现状和存在的问题，并提出了解决目前铁电光电器件转换效率低，吸光系数低，吸收光谱范围窄的方法和技术途径。申请者及团队具有良好的研究基础和积累及研究条件。值得优先资助。

在研究成果方面，建议1，补充光电转换效率的技术指标，并且要高于目前已达到的技术指标。

建议2，提出并制备出一种或几种新型结构的铁电太阳能原型器件，并比现有的太阳能器件性能更优越。

<2>该课题拟设计构建高效稳定的新型无铅铁电偶极子光电器件和进行新材料探索。首先通过理论计算筛选铁电偶极子材料。预测材料组成及结构对电子结构及光学性质影响。研究新型铁电材料结构和光电器件性能关系及其光电转换机制。进而开发简易的合成方法并进行元素掺杂，调整带隙，实现微观调控。该项目创新性较强，研究方案合理，技术路线可行，申请人具备坚实工作基础及合理团队配置。经费计划基本合理。建议予以支持

<3>近年因铁电材料正将光电转化器件的效率推向理论极限，打破了传统太阳能电池的概念，同时有机无机复合钙钛矿型太阳能电池的光电转换效率从3%迅速飙升到22%，因此引起了极大的注目。但是要使其产业化应用，急需解决材料及器件的高效率化和稳定性及无铅化问题。这几个课题极富有挑战性，但又是急需解决的重大问题。项目申请人拟设计及构建高效稳定的新型无铅铁电偶极子光电器件和进行新材料探索。利用第一性原理和密度泛函理论计算，筛选出新型无铅铁电偶极子材料、研究新型铁电材料结构和光电器件性能关系、开发简易的合成方法并进行元素掺杂，调整带隙，实现微观调控，进而设计和构建具有高稳定性和高效率无铅环保型新型铁电太阳能电池。申请人带领课题组在钙钛矿太阳能电池及染料敏化太阳电池方面，多年来进行了系统研究，有着很好的研究基础。近几年来，与本课题相关的研究成果在国际权威性期刊共发表论文100 余篇，其中被SCI 收录80余篇，引用总数已超过9590次，显示深厚的科研功底。总体来看，该项目创新性强，具有重要的科学意义，目标明确，内容清晰，方案可行，项目申请人在国际知名期刊上发表了系列相关文章，具有坚实的工作基础，为该项目的顺利进行提供了良好的条件，建议可以资助。

修改意见:

工程与材料科学部

2017年8月17日

项目批准号	51772039
申请代码	E021001
归口管理部门	
依托单位代码	11602408A0146-0276

517720391005344

国家自然科学基金委员会

资助项目计划书

资助类别：面上项目

亚类说明：

附注说明：常规面上项目

项目名称：无铅铁电偶极子光电转换器件的新材料探索及机理研究

直接费用：60万元　　执行年限：2018.01-2021.12

负 责 人：马廷丽

通讯地址：辽宁省大连市甘井子区凌工路2号

邮政编码：116024　　电　　话：0411-84986237

电子邮件：tinglima@dlut.edu.cn

依托单位：大连理工大学

联 系 人：李力　　电　　话：0411-84708600

填表日期：2017年08月19日

国家自然科学基金委员会制

简表

申请者信息	姓 名	马廷丽	性 别	女	出生年月	1962年01月	民 族	汉族
	学 位	博士			职称	教授		
	电 话	0411-84986237		电子邮件	tinglima@dlut.edu.cn			
	传 真	0411-84986230		个人网页	http://finechem.dlut.edu.cn/matingli/			
	工 作 单 位	大连理工大学						
	所 在 院 系 所	石油与化学工程学院						
依托单位信息	名 称	大连理工大学					代码	11602408A0146
	联 系 人	李力		电子邮件	fund@dlut.edu.cn			
	电 话	0411-84708600		网站地址	http://scidep.dlut.edu.cn			
合作单位信息	单 位 名 称							代 码
项目基本信息	项 目 名 称	无铅铁电偶极子光电转换器件的新材料探索及机理研究						
	资 助 类 别	面上项目			亚 类 说 明			
	附 注 说 明	常规面上项目						
	申 请 代 码	E021001:无机非金属能量转换材料			B0116:应用无机化学			
	基 地 类 别	精细化工国家重点实验室						
	执 行 年 限	2018.01-2021.12						
	直 接 费 用	60万元						

项目组主要成员

编号	姓名	出生年月	性别	职称	学位	单位名称	电话	证件号码	项目分工	每年工作时间（月）
1	马廷丽	1962.01	女	教授	博士	大连理工大学	0411-84986237	210102196201044726	项目负责人	10
2	高立国	1982.03	男	讲师	博士	大连理工大学	0427-2631810	220322198203300970	负责第一性原理和密度泛函理论计算	2
3	李艳强	1986.03	男	讲师	博士	大连理工大学	0427-2631810	410727198603291814	构建2个系列6种结构的光电器件，研究其结构和性能间的关系，阐明材料与器件性能的构效关系	2
4	王开	1990.12	男	博士生	博士	大连理工大学	041184786232	21078219901201063X	进行B位元素掺杂，调整带隙，达到带隙的微观调控，以解决无机钙钛矿带隙宽，吸收光谱窄的问题	6
5	赵而玲	1991.09	女	硕士生	硕士	大连理工大学	18342781770	371323199109224929	设计和构建具有高稳定性的新型无铅铁电偶极子太阳能电池	10
6	杨树章	1991.02	男	硕士生	硕士	大连理工大学	18342781771	372325199102083258	进行B位元素掺杂，调整带隙，达到带隙的微观调控，以解决无机钙钛矿带隙宽，吸收光谱窄的问题	10

7	江念	1992.10	女	硕士生	硕士	大连理工大学	18342782732	411327199210090628	构建2个系列6种结构的光电器件，研究其结构和性能间的关系，阐明材料与器件性能的构效关系	10
8	徐海斌	1991.03	男	硕士生	硕士	大连理工大学	18342783078	210202199103293736	开展材料的组成及结构等对材料的电子结构和带隙以及光学性质影响的研究	10

总人数	高级	中级	初级	博士后	博士生	硕士生
8	1	2			1	4

国家自然科学基金项目直接费用预算表 （定额补助）

项目批准号：51772039　　项目负责人：马廷丽　　金额单位：万元

序号	科目名称	金额
1	一、 项目直接费用	60.0000
2	1、 设备费	5.0000
3	(1)设备购置费	5.0000
4	(2)设备试制费	0.0000
5	(3)设备改造与租赁费	0.0000
6	2、 材料费	20.0000
7	3、 测试化验加工费	13.0000
8	4、 燃料动力费	0.0000
9	5、 差旅/会议/国际合作与交流费	6.0000
10	6、 出版/文献/信息传播/知识产权事务费	4.0000
11	7、 劳务费	12.0000
12	8、 专家咨询费	0.0000
13	9、 其他支出	0.0000
14	二、 自筹资金	0.0000

预算说明书（定额补助）

（请按《国家自然科学基金项目资金预算表编制说明》中的要求，对各项支出的主要用途和测算理由及合作研究外拨资金,单价≥10万元的设备等内容进行详细说明，可根据需要另加附页。）

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Recent Progress in MXene-Based Materials: Potential High-Performance Electrocatalysts

Anmin Liu, Xingyou Liang, Xuefeng Ren,* Weixin Guan, Mengfan Gao, Yanan Yang, Qiyue Yang, Liguo Gao, Yanqiang Li, and Tingli Ma**

The family of transition metal carbides, nitrides, and carbonitrides (collectively called MXenes) has been a thriving field since the first invention of $Ti_3C_2T_x$ (MXene) in 2011. MXene is a new type of nanometer 2D sheet material, which exhibits great application potentials in various fields due to its multiple advantages such as high specific surface area, good electrical conductivity, and high mechanical strength. Electrocatalysis is regarded as the core of future clean energy conversion technologies, and MXene-based materials provide inspiration for the design and preparation of electrocatalysts with high activity, high selectivity, and long loading life time. The applications of MXene-based materials in electrocatalysis, including hydrogen evolution reaction, nitrogen reduction reaction, oxygen evolution reaction, oxygen reduction reaction, carbon dioxide reduction reaction, and methanol oxidation reaction are summarized in this review. As a crucial session regarding experiments, the current safer and more environmentally friendly preparation methods of MXene are also discussed. Focusing on the materials design and enhancement methods, the key challenges and opportunities for MXene-based materials as a next-generation platform in both fundamental research and practical electrocatalysis applications are presented. This account serves to promote future efforts toward the development of MXenes and related materials in the electrocatalysis applications.

1. Introduction

The concept of 2D materials was originally introduced by graphene. Graphene is a monoatomic layer of graphite material. It was successfully peeled from graphite in 2004, which has significant anisotropy and electronic characteristics.[1] Since then, the 2D materials have gained considerable research interests due to their unique physical and chemical properties and wide application potential.[2]

In 2011, Naguib et al.[3] first prepared transition metal nitride/carbon nanolayered materials (MXene), a new type of 2D layer material. At present, over 20 different MXenes have been synthesized, and the structure and properties of dozens of MXenes have been theoretically predicted.[4] MXene can be obtained from layered $M_{n+1}AX_n$ (MAX) phases or similar precursors by selective removal of the "A-layers,"[5] where M represents early transition metals, A stands for A-group elements in the periodic table (mostly IIIA and IVA, or groups 13 and 14), and X is either carbon and/or nitrogen, and $n = 1$–3.[6] The chemical formula of MXenes is $M_{n+1}X_nT_x$, which can be obtained by adding different etchants to remove the A-layers, including hydrofluoric acid (HF),[3] F-containing acidic solutions (mainly a mixture of hydrochloric acid and lithium fluoride)[2a], or alkaline solution potassium hydroxide for fluorine-free products.[7] By utilizing the different characteristics and relative strengths between the M—X and M—A bonds, the relatively weak active A-layer can be selectively etched using the above methods, leaving a more chemically stable $M_{n+1}X_nT_x$ layer.[8] When the etchant removes A-element, the chemical activity and thermodynamics of the surface of the MXene layer tend to create surface functional groups (expressed as T_x), such as hydroxyl (—OH), oxygen (—O), or fluorine (—F)[9] (**Figure 1**a–c).

MXenes has a unique 2D layered structure similar to graphene, with a large specific surface area, good hydrophilicity, conductivity, and stability. Research shows that it has broad prospects in terms of electrochemical energy storage,[6a,13] catalysis,[14] photothermal conversion,[15] water purification,[16] gas separation,[17] biomedical applications,[18] and electromagnetic interference shielding.[19] Among them, in the field of catalysis that is currently receiving much attention, electrocatalysis

Dr. A. Liu, X. Liang, W. Guan, M. Gao, Y. Yang, Q. Yang, Dr. L. Gao, Dr. Y. Li
State Key Laboratory of Fine Chemicals, School of Chemical Engineering
Dalian University of Technology
Panjin 124221, China
E-mail: liuanmin@dlut.edu.cn
Dr. X. Ren
School of Ocean Science and Technology
Dalian University of Technology
Panjin 124221, China
E-mail: renxuefeng@dlut.edu.cn
Prof. T. Ma
Department of Materials Science and Engineering
China Jiliang University
Hangzhou 310018, China
E-mail: tinglima@life.kyutech.ac.jp
Prof. T. Ma
Graduate School of Life Science and Systems Engineering
Kyushu Institute of Technology
2–4 Hibikino, Wakamatsu, Kitakyushu, Fukuoka 808-0196, Japan
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9,10-Anthraquinone/$K_2CuFe(CN)_6$: A Highly Compatible Aqueous Aluminum-Ion Full-Battery Configuration

Lijing Yan,* Xiaomin Zeng, Shu Zhao, Wei Jiang, Zeheng Li, Xuehui Gao, Tiefeng Liu, Zekai Ji, Tingli Ma,* Min Ling,* and Chengdu Liang

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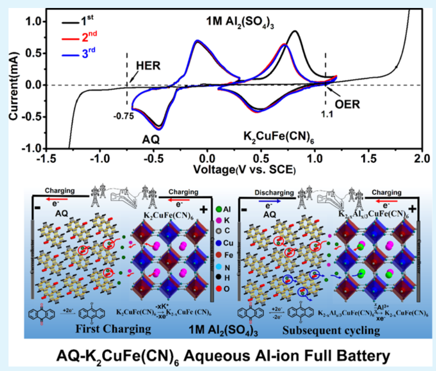
ABSTRACT: Temporally intermittent and spatially dispersed renewable energy sources strongly call for large-scale energy storage devices. Aqueous aluminum-ion batteries show great potential for application due to their safety and low cost. Thus far, however, the ideal full-battery configuration is beyond the scope due to shortcomings with regards to suitable anode and cathode materials. Herein, we report a pioneering aqueous aluminum-ion battery system consisting of a Prussian white cathode, 1 M $Al_2(SO_4)_3$ aqueous electrolyte, and an organic 9,10-anthraquinone anode. The oxidation capability of the Prussian white cathode during the first charging allows for the fabrication of the full battery without pre-inserting aluminum ions, thus making the rocking-chair-type battery feasible. Importantly, the open-framework structure of the Prussian white and distinct enolization charge storage mechanism of 9,10-anthraquinone ensure fast reaction kinetics. The full battery exhibits cycling stability with a capacity retention of 89.1% over 100 cycles at 500 mA g^{-1}, finishing a cycle in about 10 min. This work provides a pathway for developing rechargeable aqueous aluminum-ion batteries.



KEYWORDS: *aqueous electrolyte, aluminum-ion batteries, Prussian white analogues, organic electrode materials, rocking chair*

1. INTRODUCTION

The persistent pursuit of cheaper and safer energy storage devices for the integration of renewable energy sources into power grids has prompted extensive research into various types of new battery systems.[1−3] Compared with current commercial non-aqueous lithium-ion batteries (LIBs), aqueous batteries based on naturally abundant charge carriers like Na^+,[4] K^+,[5] Ca^{2+},[6] Zn^{2+},[7] Mg^{2+},[8] and Al^{3+}[9] show distinct advantages, i.e., high ionic conductivity, low-cost, and high security. Aluminum is the third most abundant element in the earth's crust, and the three-electron charge transfer of Al^{3+} charge carriers can potentially result in higher volumetric energy density.[10,11] However, the electrochemical plating/stripping potential of aluminum ($Al^{3+} + 3e^- \leftrightarrow Al$, −1.68 V vs standard hydrogen electrode (SHE)) was far too low for the stable electrochemical window of water, making metal Al hard to be directly applied in aqueous aluminum-ion batteries (AAIBs). Hence, exploring rocking-chair-type AAIBs without the metal Al anode is an expedient strategy.

To date, there is still a dearth of full-cell configurations with matched cathode/anode electrodes for AAIBs. Given the working mechanism of the rocking-chair battery, it is evident that the cathode materials should be oxidized by the extraction of cations during the first charging process. Although some materials including titanium dioxide,[12,13] manganese oxide,[14] molybdenum oxide,[15,16] and Prussian blue analogues[9,17−20] can reversibly store Al^{3+} in the aqueous electrolyte, they do not have the required oxidization capability. While pre-inserting Al^{3+} into the active materials is a widely adopted practice for full-battery assembly,[9,16,21] it is not suitable for commercial productions. Another challenge of AAIBs is that the high charge-to-radius ratio of Al^{3+} induces a strong interaction between Al^{3+} and host lattice, which causes sluggish ion-diffusion kinetics.[13,17] To produce workable AAIBs devices, it is therefore critical to develop matched anode and cathode materials with fast Al^{3+} diffusion kinetics.

Herein, we propose a rocking-chair AAIB consisting of 1 M (mol/L) $Al_2(SO_4)_3$ electrolyte, a representative Prussian white $K_2CuFe(CN)_6$ cathode, and an organic 9,10-anthraquinone (AQ) anode. Prussian white analogues (PWAs) ($A_2MFe^{II}(CN)_6$, A = Li, Na or K, M = Cu, Fe, Co, Zn, Mn, or Ni) with a three-dimensional (3D) open-framework structure have been widely studied as cathode for non-aqueous alkali metal-ion batteries.[22−24] PWAs not only contain large octahedral interstitial sites and open channels for multivalent ion diffusion but also can be oxidized through the extraction of alkali metal ions during the first charging. This unique trait

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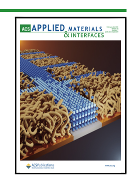

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Review

A review on electrochemical synthesized copper-based catalysts for electrochemical reduction of CO_2 to C_{2+} products

Wangxiang Ye [a], Xiaolin Guo [a,*], Tingli Ma [a,b,*]

[a] College of Materials and Chemistry, China Jiliang University, Hangzhou 310018, PR China
[b] Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, 2-4 Hibikino, Wakamatsu, Kitakyushu, Fukuoka 808-0196, Japan

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ABSTRACT

In recent decades, catalytic reduction of CO_2 is a hot topic in the research field of electrocatalysis. Copper is the only metal catalyst capable of producing multiple carbon (C_{2+}) products in electrocatalytic CO_2 reduction (ECR), however, there are still many challenges such as low selectivity, serious hydrogen evolution (HER) and poor stability. So far, various synthesis methods have been developed for Cu-based catalysts. Compared with ordinary chemical synthesis, electrochemical method has the advantages of simple process, controllable conditions, good safety and eco-friendly. In this review, the recent progress in synthesizing different types of Cu-based catalysts by means of the electrochemical method are comprehensively reviewed. The engineering strategies and the effects of the key preparation conditions on the catalytic performance of CO_2 electroreduction for C_{2+} products are discussed in details. Besides, copper-based catalysts synthesized by electrochemical methods combined with the ordinary methods (wet chemical methods, plasma activated methods and other methods) were also outlined. Finally, the development potential of electrochemical synthesis for Cu-based catalysts are recommended, which provides a direction for the future development of Cu-based catalysts with low cost and high ECR performance.

1. Introduction

With the development of the world's economy and society, the growing demand for energy becomes a hot topic and an urgent problem to be solved. Although great progress have been made in the development and utilization of green renewable energy such as solar energy, wind energy and water energy, fossil energy is still the main raw material for social energy supply, accounting for more than 80%. [1] A large amount of CO_2 emitted from fossil energy combustion is trapped in the atmosphere, which leads to the imbalance of global carbon cycle, resulting in serious global climate change and environmental problems such as greenhouse effect and sea level rise. [2,3] Thus, in recent years, how to convert CO_2 into high value-added carbonaceous compounds has attracted extensive attention in the aspects of reducing atmospheric CO_2 concentration and alleviating social energy problems. Researchers have developed a series of methods to effectively convert CO_2 into useful carbon based compounds, such as chemical conversion, [4,5] biotransformation, [6,7] photocatalysis, [8-10] electrocatalysis, [11,12] etc. Among them, with the aid of the electric energy and appropriate catalysts, the electrocatalytic reduction of CO_2 (ECR) could convert CO_2 to other carbon products at ambient temperature and pressure. This kind of CO_2 reduction technology driven by renewable energy has good environmental compatibility and adaptability, so it has become a research hotspot in the field of CO_2 conversion.

In essence, the electrocatalytic reduction of CO_2 in aqueous solution is to convert CO_2 into carbon containing products such as carbon monoxide (CO), methane (CH_4), formic acid (HCOOH), methanol (CH_3OH), ethylene (C_2H_4), ethanol (C_2H_3OH) by electron and proton transfer. The chemical equations for each product and the corresponding standard electrode potential [13] (V vs. SHE) are shown in Table 1.

The above equations are carried out in a standard atmospheric pressure and 25 °C aqueous solution, which only reflects the trend of the reaction without considering the kinetic mechanism of these reactions. In fact, as the applied voltage is satisfied, the reaction priority and reaction rate will change greatly according to electrolyte environment. Moreover, the type of catalyst also has serious effect on the reduction products. Different metal catalysts have disparate adsorption strength for the intermediate products of CO_2 reduction (as indicated by the volcano plot for carbon dioxide reduction on metals (Fig. 1)), [14] thus contributes to the obviously different product distribution. In general,

* Corresponding author.
E-mail addresses: guoxiaolin@cjlu.edu.cn (X. Guo), tinglima123@cjlu.edu.cn (T. Ma).

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Current progress in electrocatalytic carbon dioxide reduction to fuels on heterogeneous catalysts

Anmin Liu, †*[a] Mengfan Gao,†[a] Xuefeng Ren, *[d] Fanning Meng,[a] Yanan Yang,[a] Liguo Gao, [a] Qiyue Yang[a] and Tingli Ma*[bc]

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As a promising and important carbon source, utilization of carbon dioxide (CO_2) can effectively solve the energy crisis caused by fossil resource consumption and the environmental problems arising from the emission of CO_2. The electrocatalytic method is currently a promising research method for CO_2 reduction; however, it faces the problems of low product selectivity and poor faradaic efficiency (FE). Therefore, the design of effective catalysts with lower overpotential, high FE, and product selectivity is key consideration for the development of electrochemical CO_2 reduction (CO_2RR). Herein, we summarize the current research progress in the electrocatalytic reduction of CO_2 to fuels on heterogeneous catalysts. Progress in the electrocatalytic reduction of two types of products, C_1 products (CO, HCOOH, CH_3OH, CH_4) and C_2 products (CH_3CH_2OH and C_2H_4), are discussed. The catalytic activity, FE, product selectivity, electrocatalytic mechanisms, and challenges faced in terms of product selectivity and catalytic activity stability in electrochemical CO_2 reduction are discussed. This review can provide effective guidance for the design of effective catalysts with high activity, product selectivity, FE, and stability.

1. Introduction

CO_2 is a greenhouse gas that accumulates in the atmosphere; it is also a necessary material for chemical industrial processes. Ideally, CO_2 produced by fuel combustion and industrial activities will be consumed by plants for photosynthesis.[1] Thus, relative stability and dynamic equilibrium of CO_2 content should be present in the atmosphere. However, due to the intensification of human activities, the concentration of CO_2 in the atmosphere has increased by 30% since the industrial revolution, and this balance has been gradually destroyed. Table 1 (ref. 2) lists the main sources of CO_2 emissions.

[a]*State Key Laboratory of Fine Chemicals, School of Chemical Engineering, Dalian University of Technology, China. E-mail: anmin0127@163.com; liuanmin@dlut.edu.cn*

[b]*Department of Materials Science and Engineering, China Jiliang University, Hangzhou, 310018, China*

[c]*Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, 2-4 Hibikino, Wakamatsu, Kitakyushu, Fukuoka 808-0196, Japan. E-mail: tinglima@life.kyutech.ac.jp*

[d]*School of Ocean Science and Technology, Dalian University of Technology, China. E-mail: renxuefeng@dlut.edu.cn*

† These authors contributed equally to this work and should be considered co-first authors.

Dr Anmin Liu completed his Ph.D. studies at Harbin Institute of Technology in 2016. Then, he joined Dalian University of Technology as a lecturer. His research focuses on the design and preparation of functional materials and catalysts for electrochemical energy storage and conversion based on the combination of theoretical studies and electrochemical experiments.

Mengfan Gao is a Master's degree candidate in Chemical Engineering at Dalian University of Technology. She received her bachelor's degree from Henan Polytechnic University. Her research focuses on electrocatalytic NH_3 synthesis under ambient conditions and electrocatalytic reduction of CO_2 to fuels.

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Interface engineering of transitional metal sulfide–MoS_2 heterostructure composites as effective electrocatalysts for water-splitting

Yanqiang Li, *[a] Zehao Yin,†[a] Ming Cui,[a] Xuan Liu,[a] Jiabin Xiong,[b] Siru Chen†*[b] and Tingli Ma *[cd]

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Benefiting from the high electrochemical surface area brought by the 2D nanosheet structure, MoS_2 has received great research attention for the hydrogen evolution reaction (HER). Recently, it has been demonstrated that by constructing a transitional metal sulfide–MoS_2 heterostructure, the HER performance of the MoS_2-based catalysts can be further improved. It is even possible to obtain bifunctional catalysts for both HER and oxygen evolution reaction (OER) due to the synergistic effect of the different components in the composite, the electronic effect to enable an efficient electron transfer and appropriate binding energy for the intermediates of the electrocatalytic reactions, and the surface defects on the interface of the heterostructures. Herein, we review the recent progress on the construction of the transitional metal sulfide–MoS_2 heterostructure for water splitting based on non-self-supporting and self-supporting catalysts. The surface and interface parameters of the heterostructures are discussed in detail to reveal the key roles of the hybrid structures for energy conversion. We also pay special attention to the theoretical simulations based on first principles to clarify the relationships between the electrochemical performance and structure parameters. Finally, the prospects and challenges of the transition metal sulfide–MoS_2 heterostructures for water splitting in the future are proposed to prompt the reasonable design of transition metal sulfide–MoS_2 heterostructures for full water splitting.

[a]State Key Laboratory of Fine Chemicals, School of Petroleum and Chemical Engineering, Dalian University of Technology, Panjin Campus, Panjin 124221, China. E-mail: yanqiangli@dlut.edu.cn

[b]Center for Advanced Materials Research, Zhongyuan University of Technology, Zhengzhou, 450007, China. E-mail: siruchen@zut.edu.cn

[c]Department of Materials Science and Engineering, China Jiliang University, Hangzhou, 310018, China. E-mail: tinglima123@cjlu.edu.cn

[d]Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, Kitakyushu, Fukuoka, 808-0196, Japan. E-mail: tinglima@life.kyutech.ac.jp

† These authors contributed equally to this work.

Dr Yanqiang Li received his PhD degree at Jilin University in 2015. Then, he joined Dalian University of Technology as a lecturer. His research focuses on the design and preparation of functional materials and catalysts for electrochemical energy storage and conversion based on the combination of theoretical studies and electrochemical experiments.

Zehao Yin is a Master's degree candidate at Dalian University of Technology. He received her bachelor's degree from Xi'an University of Science and Technology. His research focuses on designing bifunctional electrocatalysts for high-performance zinc–air batteries.

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Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery

Lijing Yan [a], Tiefeng Liu [b], Xiaomin Zeng [c], Lei Sun [a], Xianhe Meng [a], Min Ling [c], Meiqiang Fan [a], Tingli Ma [a, *]

[a] College of Materials and Chemistry, China Jiliang University, Hangzhou, 310018, China
[b] Department of Materials Science and Engineering, Zhejiang University of Technology, Hangzhou, 310014, China
[c] College of Chemical and Biological Engineering, Zhejiang University, Hangzhou, 310027, China

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Despite its cost-effectiveness and intrinsic safety, the aqueous zinc-iodine battery is still struggling with the rapid performance degradation arising from the uneven deposition of the zinc anode and the dissolution of the iodine cathode. An effective solution of addressing the above issues simultaneously is urgently needed. Here we propose a strategy of using one porous carbon to modify the zinc anode and immobilize the iodine active materials. Zinc citrate-derived porous carbon is selected as a study model. The conductive porous carbon can not only greatly reduce the zinc nucleation barrier, and guide a uniform deposition of zinc ions, but also notably suppress the dissolution of iodine species and enhance the reaction kinetics. As a consequence, the optimized zinc-iodine battery exhibits capacity retention of 88.1% after 3000 cycles at 12C, finishing a cycle within 5 min.

1. Introduction

Aqueous zinc-iodine battery (AZIB) has been regarded as a promising electrochemical energy storage system to balance uneven distribution in time and space of renewable energies such as wind and solar energy due to its high safety and low cost [1–7]. However, both zinc anode and iodine cathode are still confronted with intrinsic issues limiting the practical application. The notorious dendrite formation induced by the uneven deposition of zinc anode can bring about battery deterioration even failure [8–11]. For the iodine cathode side, the high solubility of the discharged species like I^- or I_3^- in aqueous electrolytes will result in severe capacity decay and self-discharge by a manner somewhat analogous to the "shuttle effect" in Li-S batteries [12,13]. Thus, to realize satisfactory battery lifespan performance as soon as possible, it's very urgent to address the above adverse obstacles based on principle analysis.

Zinc dendrites are formed during the deposition process, where nucleation and crystal growth process are closely correlated with the deposition properties [8,9]. Lowering the nucleation energy barrier [14,15], reducing the local electric field intensity [16,17], and constraining the 2D ion diffusion [18,19] can endow the zinc anode with uniform deposition. Constructing a conductive zincophilic substrate featuring with high specific surface area to disperse current and increase nucleation sites meets well with aforesaid requirements. On the other side, the iodine cathode is in sore need of a host that can effectively immobilize iodine species by physical/chemical adsorption to prevent dissolution, as well as improve the conductivity of the whole electrode [20]. Built on the above analysis, porous carbon displays immense potential in tackling the issues of both anode and cathode simultaneously in AZIB. Apart from the inherent merits of easily prepared, environmentally benign, and numerous varieties, conductive porous carbon poses abundant nanopore structures and the high specific surface area, which can not only regulate the zinc ions diffusion and deposition but also robustly confine the iodine species in the solid cathode by capillary adsorption.

Herein, we propose a strategy of using porous carbon to synchronously modify the zinc anode and immobilize the iodine active materials. The zinc citrate derived porous carbon with an ultra-high specific surface area of 2966.3 $m^2\ g^{-1}$ was selected as an object model to study the functions of porous carbon in the anode/cathode electrode of AZIB. When served as the zinc deposition

* Corresponding author.
E-mail address: matingli123@cjlu.edu.cn (T. Ma).

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Recent Progress in Perovskite Solar Cells Modified by Sulfur Compounds

Yi Zhou, Caiyun Liu, Fanning Meng, Chu Zhang, Guoying Wei, Liguo Gao, and Tingli Ma**

In the past decade, organic–inorganic hybrid perovskite solar cells (PSCs) have begun to be increasingly studied worldwide owing to the superior properties of perovskite material. However, some issues have delayed their commercialization, such as their long-term stability, cost reduction, scale-up ability, and efficiency. The introduction of sulfur to PSCs can relieve the above issues because sulfur can passivate interfacial trap states, suppress charge recombination, and inhibit ion migration, thereby enhancing the stability of PSCs. Furthermore, Pb—S bonds provide new channels for carrier extraction. Herein, the sulfur-based compounds utilized in PSCs are summarized and classified according to their functions in the different layers of PSCs. The results indicate that these sulfur-based compounds have efficiently promoted the commercialization of PSCs. It is hoped that this review can help others understand the intrinsic phenomena of sulfur-based PSCs and motivate additional investigations.

1. Introduction

Since being first reported by Kojima and coworkers in 2009,[1] perovskite solar cells (PSCs) have achieved a certified power conversion efficiency (PCE) of up to 25.5% after 10 years of rapid development.[2] Such a remarkable achievement results from the outstanding photovoltaic properties of a perovskite material with the ABX_3 crystal structure, as shown in **Figure 1**, where $A = CH_3NH_3^+(MA^+)$, $NH_2CHNH_2^+(FA^+)$, Ru^+, or Cs^+; $B = Pb^{2+}$ or Sn^{2+}; and $X = I^-$, Br^-, or Cl^-. These outstanding photovoltaic properties include a wide absorption range, high absorption coefficient, suitable bandgap, and long carrier migration distance.[3] Usually, PSCs are composed of five functional layers, including a transparent conductive oxide (TCO), electron transport material (ETM; n-type semiconductor), perovskite light-absorbing material, hole transport material (HTM; p-type semiconductor), and counter electrodes (CEs). According to the direction of carrier migration, the device can be divided into an n–i–p or a p–i–n architecture, as shown in Figure 1.

Although PSCs have demonstrated considerable commercial potential, there are still four issues that need to be solved. First, certified PCEs for small-scale devices are still far from the highest theoretical PCE (30.5%), which is mainly because of the charge recombination within the perovskite film and at the interfaces.[4] Second, the motivation for cost reduction needs to be improved, including finding alternatives for the expensive noble-metal electrodes and complicated purification processes of carrier transport materials (CTMs).[5] Third, the applications of PSCs are impeded by several issues related to their stability, such as the sensitivity of the perovskite layer to polar solvents, vulnerability to environmental stress, and occurrence of ion migration.[6] Fourth, the efficiency loss in scaling up PSCs is unavoidable due to the increase in series resistance, uneven films, and inescapable inactive areas.[7]

To solve these issues, some strategies have been developed, including the compositional regulation, dimensional engineering, additive of precursor, and interface passivators. Compositional regulation has been applied to adjust the optical and electric properties of perovskite materials as well as enhance their stability.[8] Dimensional engineering focuses on improving the stability of PSCs by replacing the 3D perovskite absorber layer with 2D perovskite.[9] Additive of precursor has been proven to affect the crystallization and film formation of perovskite, and optimize the energy band structure and stability of the devices.[10] Interface passivators are widely used for defect passivation and the improvement of film quality, thereby reducing nonradiative recombination and improving device performance.[11]

Sulfur compounds could be used as the compositional regulation, additive of precursor, and interface passivators of perovskite, which can significantly improve the PCE, cost reduction, and stability of PSCs, as shown in **Figure 2**. However, no reviews have focused on the effect of sulfur in PSCs. We summarized the sulfide compounds utilized in PSCs and classified them

Dr. C. Zhang, Prof. G. Wei, Prof. T. Ma
Department of Materials Science and Engineering
China Jiliang University
Hangzhou 310018, P.R. China
E-mail: tinglima@life.kyutech.ac.jp

Y. Zhou, C. Liu, F. Meng, Prof. L. Gao
State Key Laboratory of Fine Chemicals
Dalian University of Technology
Dalian 116023, China
E-mail: liguo.gao@dlut.edu.cn

Prof. T. Ma
Graduate School of Life Science and Systems Engineering
Kyushu Institute of Technology
Kitakyushu, Fukuoka 808-0196, Japan

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Over 23% power conversion efficiency of planar perovskite solar cells via bulk heterojunction design

Shuzhang Yang [a,1], Qianji Han [a,1], Liang Wang [a,*], Yi Zhou [b], Fengyang Yu [a], Chuanqing Li [c,*], Xiaoyong Cai [d], Liguo Gao [b], Chu Zhang [e], Tingli Ma [a,e,*]

[a] *Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, 2-4 Hibikino, Wakamatsu-ku, Kitakyushu, and Fukuoka, Japan*
[b] *School of Chemical Engineering, Dalian University of Technology, Panjin 124221, PR China*
[c] *Department of Physics, Shanghai Normal University, Shanghai 200234, PR China*
[d] *CAS Key Laboratory of Standardization and Measurement for Nanotechnology, CAS Center for Excellence in Nanoscience, National Center for Nanoscience and Technology, Beijing 100190, PR China*
[e] *Department of Materials Science and Engineering, China Jiliang University, Hangzhou 310018. PR China*

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ABSTRACT

The planar organic–inorganic hybrid perovskite solar cells (PSCs) have in recent years had remarkable success due to their superior optoelectronic performance. However, their power conversion efficiency is significantly inferior compared to mesoporous structure PSCs. Unlike most other advances focusing on non-perovskite materials to improve device performance, herein a multifunctional double perovskite material, Cs_2PtI_6, is proposed as the grain boundary modifier of organic–inorganic hybrid perovskite films. Results show three main benefits of introducing Cs_2PtI_6 into perovskite films: (1) it prompts growth of perovskite crystals, resulting in improved crystallinity and enlarged crystals; (2) it suppresses the trap assisted recombination at grain boundaries thanks to the formation of heterojunction and interface passivation; (3) it raises the efficiency of carrier collection and transport at grain boundaries owing to the high carrier mobility of Cs_2PtI_6. Consequently, a PCE of 23.56% is achieved. The unencapsulated devices show less than 10% degradation compared to the initial performance after storage in ambient (≈ 30%) humidity for 2000 h. This study outlines a simple yet effective strategy for boosting the performance of planar PSCs.

1. Introduction

A host of serious problems caused by the overconsumption of fossil energy have attracted more and more attention. The development and utilization of carbon–neutral energy, especially the third generation of photovoltaic (PV) technology, is critical in the quest to solve many of these problems. Among the various PV devices, inorganic–organic hybrid perovskites solar cells (PSCs) have experienced rapid advancements because of their appropriate band gap due to tunable compositions, a high absorption coefficient, an easy fabrication process and low preparation costs [1–4]. Since the breakthrough of the all solid state device in 2012 [5], the power conversion efficiency (PCE) of PSCs have improved to over 25.5% [6]. Theoretical calculations show efficiency to peak at around 30%, making PSCs one of the most promising candidates for large-scale commercialization.

To date, the best PCE of PSCs are achieved using mesoporous architecture devices with a TiO_2 mesoporous layer. However, the indispensable high-temperature annealing process (typically 500℃) is incompatible with flexible substrates and demands high energy input [7]. Planar PSCs have proven to be a good alternative in diverse applications due to the low temperatures required for the manufacturing process. But their PCE is still lower than that of mesoporous architecture devices as a result of insufficient charge extraction-especially inside the perovskite layer. This has adverse consequences including charge accumulation, a reduced photocurrent conversion rate, and non-radiative recombination loss. To overcome these drawbacks, the preparation of high-quality perovskite film with larger grains, good morphology with uniform coverage, fewer pinholes, and low defect

* Corresponding authors at: Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, 2-4 Hibikino, Wakamatsu-ku, Kitakyushu, and Fukuoka, Japan.
E-mail addresses: wangliang@life.kyutech.ac.jp (L. Wang), lichuanqing@shnu.edu.cn (C. Li), tinglima@life.kyutech.ac.jp (T. Ma).
[1] These authors contributed equally to this work.

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Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries

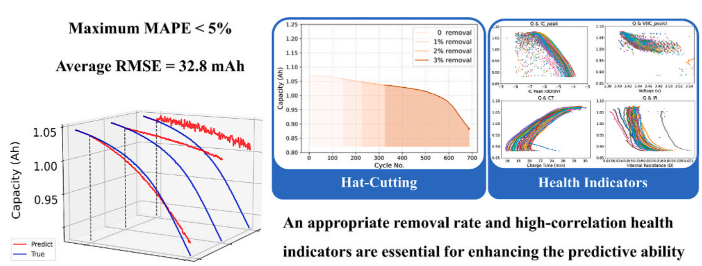
Hongmin Jiang, Hejing Wang, Yitian Su, Qiaoling Kang, Xianhe Meng, Lijing Yan [*], Tingli Ma [**]

College of Materials and Chemistry, China Jiliang University, Hangzhou, 310018, China

HIGHLIGHTS

- A data-driven method for predicting the later service life of LIBs is proposed.
- Suitable removal rate can grasp the nonlinear degradation laws in later service life.
- High-correlation health indicators are essential for enhancing the predictive ability.

GRAPHICAL ABSTRACT



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ABSTRACT

Data-driven method is an efficient tool for diagnostics and prognostics of lithium-ion batteries during their manufacturing and service period. Accurately predicting the later service life of batteries is a meaningful task. Still, it remains a challenge due to the nonlinear rapid capacity decay caused by the accumulation of inner electrochemical deterioration. Here, we use a classic deep neural network algorithm to study the degradation laws in later battery service life under the common role of multiple health indicators. A battery cyclic data pre-processing method is proposed and several characteristic parameters with a high correlation to battery life are carefully selected. Our models achieve an average test error within 5% using any continuous 30 cycles of data to predict the battery capacity curve in the next 200 cycles. This study highlights the promise of combining deliberate data processes with health indicators in data-driven modeling to predict the later service life of lithium-ion batteries.

1. Introduction

Lithium-ion batteries (LIBs) have profoundly transformed the human lifestyle through their use in consumer electronics, grid-scale energy storage, and power batteries. Accurately predicting the state of health (SOH) of LIBs by battery management system plays a key role in ensuring the reliability of the device and avoiding safety accidents as far as possible [1–3]. At present, two prediction methods, namely, model-based and data-driven, have been proposed. For the model-based method, an equivalent circuit model containing resistance, capacitance, and inductance is needed to be constructed to simulate the electrochemical reaction process of the battery [4,5]. However, in fact, not only

* Corresponding author.
** Corresponding author.
E-mail addresses: yanlijing@cjlu.edu.cn (L. Yan), matingli123@cjlu.edu.cn (T. Ma).

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Simulated solar light-driven photothermal preferential oxidation of carbon monoxide in H_2-rich streams over fast-synthesized $CuCeO_{2-x}$ nanorods

Xiaolin Guo [a,1], Wangxiang Ye [a,1], Zi'ang Chen [a], Ang Zhou [a], Dingfeng Jin [a], Tingli Ma [a,b,*]

[a] College of Materials and Chemistry, China Jiliang University, Hangzhou 310018, PR China
[b] Graduate School of Life Science and Systems Engineering, Kyushu Institute of Technology, 2-4 Hibikino, Wakamatsu, Kitakyushu, Japan

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ABSTRACT

Aiming for purification the trace amount of CO in H_2-rich streams with reduced energy consumption and low cost, solar-driven photothermal preferential oxidation of carbon monoxide on the non-precious metal oxide catalyst is proposed in this work. Cu doped $CuCeO_{2-x}$ nanorods catalysts were synthesized with a fast and simple coprecipitation method at the room temperature, which shows high CO oxidation activity in photothermal preferential oxidation of CO (CO-PROX) under UV-Vis-IR light irradiation. Rely on the various characterization methods such as UV-Vis-IR diffuse reflection spectrum (UV-Vis-IR DRS), photoluminescence spectrum (PL), transient photocurrent test, HRTEM, XRD, XPS, UV-Raman and H_2-TPR, the optical and chemical properties of the $CuCeO_{2-x}$ nanorods catalysts were uncovered. The photothermal catalytic activity of $CuCeO_{2-x}$ nanorods doped with 10 wt% Cu reaches to 90% CO conversion under Xe lamp illumination (2.5 suns), and the solar driven photothermal CO-PROX reaction on $CuCeO_{2-x}$ nanorods were proposed to be proceeded by the light-to-thermal conversion and subsequently to drive a thermal catalytic process. The catalytic performance of $CuCeO_{2-x}$ nanorods in photothermal CO-PROX is closely related to the photo-to-thermal conversion efficiency and Cu-Ce synergetic interaction of $CuCeO_{2-x}$ nanorods catalyst. The introduction of CuO_x greatly broaden the optical absorption range and promotes the light absorption capacity of ceria nanorods, which induces the catalyst with high photo-to-thermal conversion capability. Moreover, the optimal copper dopant benefits to enhance the Cu-Ce synergetic interaction and accelerate the oxidation reaction taking place at low temperature. $CuCeO_{2-x}$ nanorods catalyst shows promising competitive activity and ultra-low cost compared with the noble-based catalyst for the purification of hydrogen streams by the clean and eco-friendly sunlight sources.

1. Introduction

Hydrogen is a clean secondary energy carrier. Proton exchange membrane fuel cell (PEMFC) using hydrogen as fuel has the advantages of high energy efficiency, low operating temperature and zero emissions, and is an ideal energy source for hydrogen fuel cell vehicles. At present, the industrial production of hydrogen is mainly derived from the reforming reaction of fossil fuels (about 90% of the total production), and the produced hydrogen-rich hydrogen contains about 10% (V/V) of CO. After the water-gas shift reaction, the concentration of CO in hydrogen-rich hydrogen is still as high as 2000 ppm, which cannot meet the application requirements of proton exchange membrane fuel cells. As an important part of the fuel cell-grade hydrogen production and purification process, CO Preferential Oxidation (CO-PROX) can remove the CO concentration in the rich hydrogen to below 100 ppm, which is considered as a very economical and effective method for deep purification of trace CO in rich hydrogen. A wide variety of promising catalysts based on supported noble metals (e.g., Au and Pt) [1–4] and transition metal oxides (e.g., $CuO\text{-}CeO_2$ and Co_3O_4) [5–10] have been investigated for the thermal oxidation of CO, which mainly focus on the thermal catalysis of CO-PROX.

More recently, simulated sunlight with UV-Vis-IR irradiation has also been proposed to replace the thermal condition to perform the CO oxidation reaction, avoiding the use of thermal sources to input energy into the system. A series of work on Au-based catalyst photocatalytic CO selective oxidation have been carried out by the research group of X. Fu, and W. Dai, including PANI-assisted Au-TiO_2, Cu-modified Au-TiO_2, Au/ZIF-8-TiO_2, Au-$ZnCo_2O_4$, Au-TiO_2-C_3N_4 and other catalysts [11–15] for

* Corresponding author.
E-mail address: matingli123@cjlu.edu.cn (T. Ma).
[1] These authors contributed equally to this work

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Engn, Kitakyushu, Fukuoka 8080196, Japan.
通讯作者地址: Ma, TL (corresponding author), China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; Gao, LG (corresponding author), Dalian Univ Technol, State Key Lab Fine Chem, Dalian 116023, Peoples R China.; Ma, TL (corresponding author), Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Kitakyushu, Fukuoka 8080196, Japan.
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作者地址: [Liang, Xingyou; Yang, Qiyue; Gao, Liguo; Gao, Mengfan; Yang, Yanan; Zhu, Haiding; Li, Guangxin; Liu, Anmin] Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Dalian, Peoples R China.; [Ren, Xuefeng] Dalian Univ Technol, Sch Ocean Sci & Technol, Panjin 124221, Peoples R China.; [Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.
通讯作者地址: Liu, AM (corresponding author), Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Dalian, Peoples R China.; Ren, XF (corresponding author), Dalian Univ Technol, Sch Ocean Sci & Technol, Panjin 124221, Peoples R China.
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中科院期刊分区: 小类(基础版) (2020) 纳米科技 [3]; 小类(基础版) (2020) 物理：应用 [2]; 小类(基础版) (2020) 材料科学：综合 [2]; 小类(基础版) (2020) 化学综合 [2]; 小类(基础版) (2019) 纳米科技 [3]; 小类(基础版) (2019) 物理：应用 [2]; 小类(基础版) (2019) 材料科学：综合 [2]; 小类(基础版) (2019) 化学综合 [2]; 小类(基础版) (2018) 纳米科技 [2]; 小类(基础版) (2018) 物理：应用 [2]; 小类(基础版) (2018) 材料科学：综合 [2]; 小类(基础版) (2018) 化学综合 [2]; 小类(基础版) (2017) 纳米科技 [2]; 小类(基础版) (2017) 物理：应用 [2]; 小类(基础版) (2017) 材料科学：综合 [2]; 小类(基础版) (2017) 化学综合 [2]; 小类(基础版) (2016) 纳米科技 [2]; 小类(基础版) (2016) 物理：应用 [2]; 小类(基础版) (2016) 材料科学：综合 [2]; 小类(基础版) (2016) 化学综合 [2]; 小类(基础版) (2015) 纳米科技 [2]; 小类(基础版) (2015) 物理：应用 [2]; 小类(基础版) (2015) 材料科学：综合 [2]; 小类(基础版) (2015) 化学综合 [2]; 小类(基础版) (2014) 纳米科技 [3]; 小类(基础版) (2014) 物理：应用 [2]; 小类(基础版) (2014) 材料科学：综合 [2]; 小类(基础版) (2014) 化学综合 [3]; 小类(基础版) (2013) 纳米科技 [3]; 小类(基础版) (2013) 物理：应用 [2]; 小类(基础版) (2013) 材料科学：综合 [2]; 小类(基础版) (2013) 化学综合 [3]; 小类(基础版) (2012) 纳米科技 [3]; 小类(基础版) (2012) 物理：应用 [2]; 小类(基础版) (2012) 材料科学：综合 [2]; 小类(基础版) (2012) 化学综合 [2]; 小类(基础版) (2011) 纳米科技 [3]; 小类(基础版) (2011) 物理：应用 [2]; 小类(基础版) (2011) 材料科学：综合 [2]; 小类(基础版) (2011) 化学综合 [3]; 大类(基础版) (2020) 工程技术 [1] Top 期刊; 大类(基础版) (2019) 工程技术 [1] Top 期刊; 大类(基础版) (2018) 工程技术 [1] Top 期刊; 大类(基础版) (2017) 工程技术 [1] Top 期刊; 大类(基础版) (2016) 工程技术 [1] Top 期刊; 大类(基础版) (2015) 工程技术 [1] Top 期刊; 大类(基础版) (2014) 工程技术 [1] Top 期刊; 大类(基础版) (2013) 工程技术 [1] Top 期刊; 大类(基础版) (2012) 工程技术 [1] Top 期刊; 大类(基础版) (2011) 工程技术 [1] Top 期刊;

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4 第 **4** 条，共 **11** 条:
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文献类型: Review
标题: Interface engineering of transitional metal sulfide-MoS2 heterostructure composites as effective electrocatalysts for water-splitting

作者: Li, YQ (Li, Yanqiang); Yin, ZH (Yin, Zehao); Cui, M (Cui, Ming); Liu, X (Liu, Xuan); Xiong, JB (Xiong, Jiabin); Chen, SR (Chen, Siru); Ma, TL (Ma, Tingli)
作者地址: [Li, Yanqiang; Yin, Zehao; Cui, Ming; Liu, Xuan] Dalian Univ Technol, Sch Petr & Chem Engn, State Key Lab Fine Chem, Panjin Campus, Panjin 124221, Peoples R China.; [Xiong, Jiabin; Chen, Siru] Zhongyuan Univ Technol, Ctr Adv Mat Res, Zhengzhou 450007, Peoples R China.; [Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Kitakyushu, Fukuoka 8080196, Japan.
通讯作者地址: Li, YQ (corresponding author), Dalian Univ Technol, Sch Petr & Chem Engn, State Key Lab Fine Chem, Panjin Campus, Panjin 124221, Peoples R China.; Chen, SR (corresponding author), Zhongyuan Univ Technol, Ctr Adv Mat Res, Zhengzhou 450007, Peoples R China.; Ma, TL (corresponding author), China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; Ma, TL (corresponding author), Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Kitakyushu, Fukuoka 8080196, Japan.
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电子邮件地址: yanqiangli@dlut.edu.cn; siruchen@zut.edu.cn; tinglima123@cjlu.edu.cn
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JCR 期刊分区: CHEMISTRY, PHYSICAL [Q1] 18/162 (2020); ENERGY & FUELS [Q1] 8/114 (2020); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 29/333 (2020); ENERGY & FUELS [Q1] 8/112 (2019); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 24/314 (2019); CHEMISTRY, PHYSICAL [Q1] 17/159 (2019); CHEMISTRY, PHYSICAL [Q1] 14/148 (2018); ENERGY & FUELS [Q1] 6/103 (2018); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 21/293 (2018); CHEMISTRY, PHYSICAL [Q1] 14/147 (2017); ENERGY & FUELS [Q1] 6/97 (2017); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 20/285 (2017); CHEMISTRY, PHYSICAL [Q1] 15/146 (2016); ENERGY & FUELS [Q1] 4/92 (2016); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 19/275 (2016); CHEMISTRY, PHYSICAL [Q1] 16/144 (2015); ENERGY & FUELS [Q1] 4/88 (2015); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 21/271 (2015); CHEMISTRY, PHYSICAL [Q1] 18/139 (2014); ENERGY & FUELS [Q1] 5/89 (2014); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 20/260 (2014); CHEMISTRY, PHYSICAL [Q4] 135/136 (2013); ENERGY & FUELS [Q4] 82/83 (2013); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q4] 249/251 (2013);
中科院期刊分区: 小类(基础版) (2020) 能源与燃料 [1]; 小类(基础版) (2020) 物理化学 [2]; 小类(基础版) (2020) 材料科学：综合 [2]; 小类(基础版) (2019) 能源与燃料 [1]; 小类(基础版) (2019) 物理化学 [2]; 小类(基础版) (2019) 材料科学：综合 [2]; 小类(基础版) (2018) 能源与燃料 [1]; 小类(基础版) (2018) 物理化学 [2]; 小类(基础版) (2018) 材料科学：综合 [2]; 小类(基础版) (2017) 能源与燃料 [1]; 小类(基础版) (2017) 物理化学 [2]; 小类(基础版) (2017) 材料科学：综合 [2]; 小类(基础版) (2016) 能源与燃料 [1]; 小类(基础版) (2016) 物理化学 [2]; 小类(基础版) (2016) 材料科学：综合 [2]; 小类(基础版) (2015) 能源与燃料 [2]; 小类(基础版) (2015) 物理化学 [2]; 小类(基础版) (2015) 材料科学：综合 [2]; 小类(基础版) (2014) 能源与燃料 [2]; 小类(基础版) (2014) 物理化学 [2]; 小类(基础版) (2014) 材料科学：综合 [2]; 大类(基础版) (2020) 工程技术 [1] Top 期刊; 大类(基础版) (2019) 工程技术 [1] Top 期刊; 大类(基础版) (2018) 工程技术 [1] Top 期刊; 大类(基础版) (2017) 工程技术 [1] Top 期刊; 大类(基础版) (2016) 工程技术 [1] Top 期刊; 大类(基础版) (2015) 工程技术 [1] Top 期刊; 大类(基础版) (2014) 工程技术 [1] Top 期刊;

第 **5** 条，共 **11** 条:
出版物类型: J
文献类型: Article
标题: DFT study of the defective carbon materials with vacancy and heteroatom as catalyst for NRR
作者: Liu, AM (Liu, Anmin); Yang, YN (Yang, Yanan); Kong, DZ (Kong, Dezhen); Ren, XF (Ren, Xuefeng); Gao, MF (Gao, Mengfan); Liang, XY (Liang, Xingyou); Yang, QY (Yang, Qiyue); Zhang, JL (Zhang, Jiale); Gao, LG (Gao, Liguo); Ma, TL (Ma, Tingli)
作者地址: [Liu, Anmin; Yang, Yanan; Kong, Dezhen; Gao, Mengfan; Liang, Xingyou; Yang, Qiyue; Zhang, Jiale; Gao, Liguo] Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Dalian, Peoples R China.; [Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.; [Ren, Xuefeng] Dalian Univ Technol, Sch Ocean Sci & Technol, Panjin 124221, Peoples R China.
通讯作者地址: Liu, AM (corresponding author), Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Dalian, Peoples R China.; Ma, TL (corresponding author), China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; Ma, TL (corresponding author), Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.; Ren, XF (corresponding author), Dalian Univ Technol, Sch Ocean Sci & Technol, Panjin 124221, Peoples R China.
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JCR 期刊分区: CHEMISTRY, PHYSICAL [Q1] 37/162 (2020); MATERIALS SCIENCE, COATINGS & FILMS [Q1] 1/21 (2020); PHYSICS, CONDENSED MATTER [Q1] 16/69 (2020); PHYSICS, APPLIED [Q1] 30/160 (2020); MATERIALS SCIENCE, COATINGS & FILMS [Q1] 1/21 (2019); PHYSICS, CONDENSED MATTER [Q1] 17/69 (2019); PHYSICS, APPLIED [Q1] 27/155 (2019); CHEMISTRY, PHYSICAL [Q1] 37/159 (2019); CHEMISTRY, PHYSICAL [Q1] 35/148 (2018); MATERIALS SCIENCE, COATINGS & FILMS [Q1] 1/20 (2018); PHYSICS, APPLIED [Q1] 23/148 (2018); PHYSICS, CONDENSED MATTER [Q1] 16/68 (2018); MATERIALS SCIENCE, COATINGS & FILMS [Q1] 1/19 (2017); PHYSICS, APPLIED [Q1] 25/146 (2017); CHEMISTRY, PHYSICAL [Q2] 39/147 (2017); PHYSICS, CONDENSED MATTER [Q2] 17/67 (2017); MATERIALS SCIENCE, COATINGS & FILMS [Q1] 1/19 (2016); PHYSICS, APPLIED [Q1] 32/148 (2016); CHEMISTRY, PHYSICAL [Q2] 46/146 (2016); PHYSICS, CONDENSED MATTER [Q2] 19/67 (2016); MATERIALS SCIENCE, COATINGS & FILMS [Q1] 1/18 (2015); PHYSICS, APPLIED [Q1] 27/145 (2015); CHEMISTRY, PHYSICAL [Q2] 49/144 (2015); PHYSICS, CONDENSED MATTER [Q2] 17/67 (2015); MATERIALS SCIENCE, COATINGS & FILMS [Q1] 2/17 (2014); PHYSICS, APPLIED [Q1] 28/144 (2014); CHEMISTRY, PHYSICAL [Q2] 51/139 (2014); PHYSICS, CONDENSED MATTER [Q2] 17/67 (2014); MATERIALS SCIENCE, COATINGS & FILMS [Q1] 2/18 (2013); PHYSICS, APPLIED [Q1] 29/136 (2013); CHEMISTRY, PHYSICAL [Q2] 56/136 (2013); PHYSICS, CONDENSED MATTER [Q2] 19/67 (2013); MATERIALS SCIENCE, COATINGS & FILMS [Q1] 2/17 (2012); PHYSICS, APPLIED [Q2] 34/128 (2012); PHYSICS, CONDENSED MATTER [Q2] 21/68 (2012); CHEMISTRY, PHYSICAL [Q3] 69/135 (2012); MATERIALS SCIENCE, COATINGS & FILMS [Q1] 2/18 (2011); CHEMISTRY, PHYSICAL [Q2] 66/134 (2011); PHYSICS, APPLIED [Q2] 38/125 (2011); PHYSICS, CONDENSED MATTER [Q2] 22/69 (2011); MATERIALS SCIENCE, COATINGS & FILMS [Q2] 7/18 (2010); PHYSICS, APPLIED [Q2] 41/118 (2010);

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6 第 **6** 条，共 **11** 条:
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作者地址: [Liu, Anmin; Liang, Xingyou; Guan, Weixin; Gao, Mengfan; Yang, Yanan; Yang, Qiyue; Gao, Liguo; Li, Yanqiang] Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Panjin 124221, Peoples R China.; [Ren, Xuefeng] Dalian Univ Technol, Sch Ocean Sci & Technol, Panjin 124221, Peoples R China.; [Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.
通讯作者地址: Liu, AM (corresponding author), Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Panjin 124221, Peoples R China.; Ren, XF (corresponding author), Dalian Univ Technol, Sch Ocean Sci & Technol, Panjin 124221, Peoples R China.; Ma, TL (corresponding author), China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; Ma, TL (corresponding author), Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.

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文献类型: Review

标题: Current Progress of Electrocatalysts for Ammonia Synthesis Through Electrochemical Nitrogen Reduction Under Ambient Conditions

作者: Liu, AM (Liu, Anmin); Yang, YN (Yang, Yanan); Ren, XF (Ren, Xuefeng); Zhao, QD (Zhao, Qidong); Gao, MF (Gao, Mengfan); Guan, WX (Guan, Weixin); Meng, FN (Meng, Fanning); Gao, LG (Gao, Liguo); Yang, QY (Yang, Qiyue); Liang, XY (Liang, Xingyou); Ma, TL (Ma, Tingli)

作者地址: [Liu, Anmin; Yang, Yanan; Zhao, Qidong; Gao, Mengfan; Guan, Weixin; Meng, Fanning; Gao, Liguo; Yang, Qiyue; Liang, Xingyou] Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Dalian, Peoples R China.; [Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.; [Ren, Xuefeng] Dalian Univ Technol, Sch Ocean Sci & Technol, Panjin 124221, Peoples R China.

通讯作者地址: Liu, AM (corresponding author), Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Dalian, Peoples R China.; Ma, TL (corresponding author), China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; Ma, TL (corresponding author), Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.

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语种: English

电子邮件地址: liuanmin@dlut.edu.cn; tinglima@life.kyutech.ac.jp

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JCR 期刊分区: CHEMISTRY, MULTIDISCIPLINARY [Q1] 27/178 (2020); GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY [Q1] 4/44 (2020); GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY [Q1] 3/41 (2019); CHEMISTRY, MULTIDISCIPLINARY [Q1] 22/177 (2019); CHEMISTRY, MULTIDISCIPLINARY [Q1] 23/172 (2018); GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY [Q1] 3/35 (2018); CHEMISTRY, MULTIDISCIPLINARY [Q1] 24/171 (2017); GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY [Q1] 3/33 (2017); CHEMISTRY, MULTIDISCIPLINARY [Q1] 22/166 (2016); GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY [Q1] 3/31 (2016); CHEMISTRY, MULTIDISCIPLINARY [Q1] 20/163 (2015); GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY [Q1] 2/29 (2015); CHEMISTRY, MULTIDISCIPLINARY [Q1] 18/157 (2014); CHEMISTRY, MULTIDISCIPLINARY [Q1] 17/148 (2013); CHEMISTRY, MULTIDISCIPLINARY [Q1] 17/152 (2012); CHEMISTRY, MULTIDISCIPLINARY [Q1] 15/154 (2011); CHEMISTRY, MULTIDISCIPLINARY [Q1] 15/147 (2010); CHEMISTRY, MULTIDISCIPLINARY [Q1] 18/140 (2009);

通讯作者地址: Liu, AM (corresponding author), Dalian Univ Technol, State Key Lab Fine Chem, Sch Chem Engn, Dalian, Peoples R China.; Ma, TL (corresponding author), China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; Wu, G (corresponding author), Univ Buffalo State Univ New York, Dept Chem & Biol Engn, Buffalo, NY 14260 USA.
来源出版物: CERAMICS INTERNATIONAL　卷: 46　期: 5　页: 6934-6939　**DOI:** 10.1016/j.ceramint.2019.11.008　出版年: 2020　出版日期: APR 1
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核心合集中的 "被引频次": 17
语种: English
电子邮件地址: anmin0127@163.com; tinglima@life.kyutech.ac.jp; gangwu@buffalo.edu
IDS 号: KN9WA
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JCR 影响因子: 4.527 (2020); 3.830 (2019); 3.450 (2018); 3.057 (2017); 2.986 (2016); 2.758 (2015); 2.605 (2014); 2.086 (2013); 1.789 (2012); 1.751 (2011); 1.472 (2010); 1.686 (2009); 1.369 (2008); 1.360 (2007); 1.128 (2006); 0.702 (2005); 1.040 (2004); 0.704 (2003); 0.731 (2002); 0.593 (2001); 0.490 (2000); 0.325 (1999); 0.376 (1998); 0.383 (1997);
JCR 期刊分区: MATERIALS SCIENCE, CERAMICS [Q1] 3/29 (2020); MATERIALS SCIENCE, CERAMICS [Q1] 2/28 (2019); MATERIALS SCIENCE, CERAMICS [Q1] 2/28 (2018); MATERIALS SCIENCE, CERAMICS [Q1] 2/27 (2017); MATERIALS SCIENCE, CERAMICS [Q1] 2/26 (2016); MATERIALS SCIENCE, CERAMICS [Q1] 3/27 (2015); MATERIALS SCIENCE, CERAMICS [Q1] 4/26 (2014); MATERIALS SCIENCE, CERAMICS [Q1] 3/25 (2013); MATERIALS SCIENCE, CERAMICS [Q1] 3/27 (2012); MATERIALS SCIENCE, CERAMICS [Q1] 3/25 (2011); MATERIALS SCIENCE, CERAMICS [Q1] 5/25 (2010); MATERIALS SCIENCE, CERAMICS [Q1] 3/25 (2009); MATERIALS SCIENCE, CERAMICS [Q1] 6/24 (2008); MATERIALS SCIENCE, CERAMICS [Q1] 4/25 (2007); MATERIALS SCIENCE, CERAMICS [Q1] 6/26 (2006); MATERIALS SCIENCE, CERAMICS [Q2] 8/28 (2005); MATERIALS SCIENCE, CERAMICS [Q1] 6/25 (2004); MATERIALS SCIENCE, CERAMICS [Q2] 9/25 (2003); MATERIALS SCIENCE, CERAMICS [Q1] 6/24 (2002); MATERIALS SCIENCE, CERAMICS [Q2] 8/24 (2001); MATERIALS SCIENCE, CERAMICS [Q2] 10/25 (2000); MATERIALS SCIENCE, CERAMICS [Q3] 13/22 (1999); MATERIALS SCIENCE, CERAMICS [Q2] 10/20 (1998); MATERIALS SCIENCE, CERAMICS [Q3] 8/14 (1997);
中科院期刊分区: 小类(基础版) (2020) 材料科学：硅酸盐 [1]; 小类(基础版) (2019) 材料科学：硅酸盐 [1]; 小类(基础版) (2018) 材料科学：硅酸盐 [1]; 小类(基础版) (2017) 材料科学：硅酸盐 [1]; 小类(基础版) (2016) 材料科学：硅酸盐 [2]; 小类(基础版) (2015) 材料科学：硅酸盐 [2]; 小类(基础版) (2014) 材料科学：硅酸盐 [2]; 小类(基础版) (2013) 材料科学：硅酸盐 [2]; 小类(基础版) (2012) 材料科学：硅酸盐 [2]; 小类(基础版) (2011) 材料科学：硅酸盐 [2]; 小类(基础版) (2010) 材料科学：硅酸盐 [2]; 大类(基础版) (2020) 工程技术 [2] Top 期刊; 大类(基础版) (2019) 工程技术 [2] Top 期刊; 大类(基础版) (2018) 工程技术 [2] Top 期刊; 大类(基础版) (2017) 工程技术 [2] Top 期刊; 大类(基础版) (2016) 工程技术 [2]; 大类(基础版) (2015) 工程技术 [2]; 大类(基础版) (2014) 工程技术 [3]; 大类(基础版) (2013) 工程技术 [3]; 大类(基础版) (2012) 工程技术 [3]; 大类(基础版) (2011) 工程技术 [3]; 大类(基础版) (2010) 工程技术 [3];

第 **10** 条，共 **11** 条:
出版物类型: J
文献类型: Review
标题: Current progress in electrocatalytic carbon dioxide reduction to fuels on heterogeneous catalysts
10 作者: Liu, AM (Liu, Anmin); Gao, MF (Gao, Mengfan); Ren, XF (Ren, Xuefeng); Meng, FN (Meng, Fanning); Yang, YN (Yang, Yanan); Gao, LG (Gao, Liguo); Yang, QY (Yang, Qiyue); Ma, TL (Ma, Tingli)
作者地址: [Liu, Anmin; Gao, Mengfan; Meng, Fanning; Yang, Yanan; Gao, Liguo; Yang, Qiyue] Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Dalian, Peoples R China.; [Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Tech, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.; [Ren, Xuefeng] Dalian Univ Technol, Sch Ocean Sci & Technol, Dalian, Peoples R China.
通讯作者地址: Liu, AM (corresponding author), Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Dalian, Peoples R China.; Ma, TL (corresponding author), China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; Ma, TL (corresponding author), Kyushu Inst Tech, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.; Ren, XF (corresponding author), Dalian Univ Technol, Sch Ocean Sci & Technol, Dalian, Peoples R China.
来源出版物: JOURNAL OF MATERIALS CHEMISTRY A　卷: 8　期: 7　页: 3541-3562　**DOI:** 10.1039/c9ta11966c　出版年: 2020　出版日期: FEB 21
入藏号: WOS:000521346600001
核心合集中的 "被引频次": 61
语种: English
电子邮件地址: anmin0127@163.com; renxuefeng@dlut.edu.cn; tinglima@life.kyutech.ac.jp
IDS 号: KW7ET
ISSN: 2050-7488
eISSN: 2050-7496
JCR 影响因子: 12.732 (2020); 11.301 (2019); 10.733 (2018); 9.931 (2017); 8.867 (2016); 8.262 (2015); 7.443 (2014);
JCR 期刊分区: CHEMISTRY, PHYSICAL [Q1] 18/162 (2020); ENERGY & FUELS [Q1] 8/114 (2020); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 29/333 (2020); ENERGY & FUELS [Q1] 8/112 (2019); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 24/314 (2019); CHEMISTRY, PHYSICAL [Q1] 17/159 (2019); CHEMISTRY, PHYSICAL [Q1] 14/148 (2018); ENERGY & FUELS [Q1] 6/103 (2018); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 21/293 (2018); CHEMISTRY, PHYSICAL [Q1] 14/147 (2017); ENERGY & FUELS [Q1] 6/97 (2017); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 20/285 (2017); CHEMISTRY, PHYSICAL [Q1] 15/146 (2016); ENERGY & FUELS [Q1] 4/92 (2016); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 19/275 (2016); CHEMISTRY, PHYSICAL [Q1] 16/144 (2015); ENERGY & FUELS [Q1] 4/88 (2015); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 21/271 (2015); CHEMISTRY, PHYSICAL [Q1] 18/139 (2014); ENERGY & FUELS [Q1] 5/89 (2014); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 20/260 (2014); CHEMISTRY, PHYSICAL [Q4] 135/136 (2013); ENERGY & FUELS [Q4] 82/83 (2013); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q4] 249/251 (2013);
中科院期刊分区: 小类(基础版) (2020) 能源与燃料 [1]; 小类(基础版) (2020) 物理化学 [2]; 小类(基础版) (2020) 材料科学：综合 [2]; 小类(基础版) (2019) 能源与燃料 [1]; 小类(基础版) (2019) 物理化学 [2]; 小类(基础版) (2019) 材料科学：综合 [2]; 小类(基础版) (2018) 能源与燃料 [1]; 小类(基础版) (2018) 物理化学 [2]; 小类(基础版) (2018) 材料科学：综合 [2]; 小类(基础版) (2017) 能源与燃料 [1]; 小类(基础版) (2017) 物理化学 [2]; 小类(基础版) (2017) 材料科学：综合 [2]; 小类(基础版) (2016) 能源与燃料 [1]; 小类(基础版) (2016) 物理化学 [2]; 小类(基础版) (2016) 材料科学：综合 [2]; 小类(基础版) (2015) 能源与燃料 [2]; 小类(基础版) (2015) 物理化学 [2]; 小类(基础版) (2015) 材料科学：综合 [2]; 小类(基础版) (2014) 能源与燃料 [2]; 小类(基础版) (2014) 物理化学 [2]; 小类(基础版) (2014) 材料科学：综合 [2]; 大类(基础版) (2020) 工程技术 [1] Top 期刊; 大类(基础版) (2019) 工程技术 [1] Top 期刊; 大类(基础版) (2018) 工程技术 [1] Top 期刊; 大类(基础版) (2017) 工程技术 [1] Top 期刊; 大类(基础版) (2016) 工程技术 [1] Top 期刊; 大类(基础版) (2015) 工程技术 [1] Top 期刊; 大类(基础版) (2014) 工程技术 [1] Top 期刊;

第 **11** 条，共 **11** 条:
出版物类型: J
文献类型: Article
标题: A black phosphorus/Ti3C2 MXene nanocomposite for sodium-ion batteries: a combined experimental and theoretical study
作者: Li, H (Li, Huan); Liu, AM (Liu, Anmin); Ren, XF (Ren, Xuefeng); Yang, YN (Yang, Yanan); Gao, LG (Gao, Liguo); Fan, MQ (Fan, Meiqiang); Ma, TL (Ma, Tingli)

文献检索报告
Retrieval Report

中国计量大学图书馆 **CJLULIB** 单号：**RT-2021-0189**

附件一：经检索《**Science Citation Index Expanded**》，下述论文被 **SCI-E** 收录。（检索时间**2021**年**11**月**4**日）

第 **1** 条，共 **1** 条:
出版物类型: J
文献类型: Article
标题: 9,10-Anthraquinone/K2CuFe(CN)(6): A Highly Compatible Aqueous Aluminum-Ion Full-Battery Configuration
作者: Yan, LJ (Yan, Lijing); Zeng, XM (Zeng, Xiaomin); Zhao, S (Zhao, Shu); Jiang, W (Jiang, Wei); Li, ZH (Li, Zeheng); Gao, XH (Gao, Xuehui); Liu, TF (Liu, Tiefeng); Ji, ZK (Ji, Zekai); Ma, TL (Ma, Tingli); Ling, M (Ling, Min); Liang, CD (Liang, Chengdu)
作者地址: [Yan, Lijing; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Zeng, Xiaomin; Zhao, Shu; Jiang, Wei; Li, Zeheng; Ji, Zekai; Ling, Min; Liang, Chengdu] Zhejiang Univ, Coll Chem & Biol Engn, Hangzhou 310027, Peoples R China.; [Gao, Xuehui] Zhejiang Normal Univ, Dept Chem, Jinhua 321004, Zhejiang, Peoples R China.; [Liu, Tiefeng] Zhejiang Univ Technol, Dept Mat Sci & Engn, Hangzhou 310014, Peoples R China.
通讯作者地址: Yan, LJ; Ma, TL (corresponding author), China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; Ling, M (corresponding author), Zhejiang Univ, Coll Chem & Biol Engn, Hangzhou 310027, Peoples R China.
来源出版物: ACS APPLIED MATERIALS & INTERFACES 卷: 13 期: 7 页: 8353-8360 **DOI:** 10.1021/acsami.0c20543 出版年: 2021 出版日期: FEB 24
入藏号: WOS:000623228500048
PubMed ID: 33560815
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语种: English
电子邮件地址: yanlijing@cjlu.edu.cn; matingli123@cjlu.edu.cn; minling@zju.edu.cn
IDS 号: QO6CO
ISSN: 1944-8244
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JCR 影响因子: 9.229 (2020);
JCR 期刊分区: MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 44/333 (2020); NANOSCIENCE & NANOTECHNOLOGY [Q1] 21/106 (2020);
中科院期刊分区: 小类(基础版) (2020) 纳米科技 [2]; 小类(基础版) (2020) 材料科学：综合 [2]; 大类(基础版) (2020) 工程技术 [1] Top 期刊;

附件二：经检索《**Science Citation Index Expanded**》，下述论文被 **SCI-E** 引用。（检索时间**2021**年**11**月**4**日）

#	作者	标题	来源出版物	出版物类型	入藏号	SCI-E 引用
1	**Yan, LJ**; Zeng, XM; Zhao, S; Jiang, W; Li, ZH; Gao, XH; Liu, TF; Ji, ZK; Ma, TL; Ling, M; Liang, CD	9,10-Anthraquinone/K2CuFe(CN)(6): A Highly Compatible Aqueous Aluminum-Ion Full-Battery Configuration	*ACS APPLIED MATERIALS & INTERFACES* 2021, 13 (7): 8353-8360	J Article	WOS:000623228500048	0
					合计	0

被引文献 **1**
出版物类型: J
文献类型: Article
标题: 9,10-Anthraquinone/K2CuFe(CN)(6): A Highly Compatible Aqueous Aluminum-Ion Full-Battery Configuration
作者: Yan, LJ (Yan, Lijing); Zeng, XM (Zeng, Xiaomin); Zhao, S (Zhao, Shu); Jiang, W (Jiang, Wei); Li, ZH (Li, Zeheng); Gao, XH (Gao, Xuehui); Liu, TF (Liu, Tiefeng); Ji, ZK (Ji, Zekai); Ma, TL (Ma, Tingli); Ling, M (Ling, Min); Liang, CD (Liang, Chengdu)
作者地址: [Yan, Lijing; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Zeng, Xiaomin; Zhao, Shu; Jiang, Wei; Li, Zeheng; Ji, Zekai; Ling, Min; Liang, Chengdu] Zhejiang Univ, Coll Chem & Biol Engn, Hangzhou 310027, Peoples R China.; [Gao, Xuehui] Zhejiang Normal Univ, Dept Chem, Jinhua 321004, Zhejiang, Peoples R China.; [Liu, Tiefeng] Zhejiang Univ Technol, Dept Mat Sci & Engn, Hangzhou 310014, Peoples R China.
通讯作者地址: Yan, LJ; Ma, TL (corresponding author), China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; Ling, M (corresponding author), Zhejiang Univ, Coll Chem & Biol Engn, Hangzhou 310027, Peoples R China.
来源出版物: ACS APPLIED MATERIALS & INTERFACES 卷: 13 期: 7 页: 8353-8360 **DOI:** 10.1021/acsami.0c20543 出版年: 2021 出版日期: FEB 24
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PubMed ID: 33560815
核心合集中的 **"被引频次":** 2
语种: English
电子邮件地址: yanlijing@cjlu.edu.cn; matingli123@cjlu.edu.cn; minling@zju.edu.cn
IDS 号: QO6CO
ISSN: 1944-8244
eISSN: 1944-8252

施引文献：**SCI-E** 引用 **0** 次

文献检索报告
Retrieval Report

附件一：经检索《**Science Citation Index Expanded**》，下述论文被 **SCI-E** 收录。（检索时间**2021**年**11**月**2**日）

第 **1** 条，共 **1** 条:
出版物类型**:** J
文献类型**:** Review
标题**:** A review on electrochemical synthesized copper-based catalysts for electrochemical reduction of CO_2 to C2+ products
作者**:** Ye, WX (Ye, Wangxiang); Guo, XL (Guo, Xiaolin); Ma, TL (Ma, Tingli)
作者地址**:** [Ye, Wangxiang; Guo, Xiaolin; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.
通讯作者地址**:** Guo, XL; Ma, TL (corresponding author), China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; Ma, TL (corresponding author), Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.
来源出版物**:** CHEMICAL ENGINEERING JOURNAL 卷**:** 414 页**:** 16 **DOI:** 10.1016/j.cej.2021.128825 出版年**:** 2021 出版日期**:** JUN 15
入藏号**:** WOS:000641371800001
核心合集中的 **"**被引频次**":** 13
语种**:** English
电子邮件地址**:** guoxiaolin@cjlu.edu.cn; tinglima123@cjlu.edu.cn
IDS 号**:** RO9PT
ISSN: 1385-8947
eISSN: 1873-3212
中科院期刊分区**:** 小类(基础版) (2020) 工程：环境 [1]; 小类(基础版) (2020) 工程：化工 [1]; 大类(基础版) (2020) 工程技术 [1] Top 期刊;

附件二：经检索《**Science Citation Index Expanded**》，下述论文被 **SCI-E** 引用。（检索时间**2021**年**11**月**2**日）

#	作者	标题	来源出版物	出版物类型	入藏号	SCI-E 引用 总引	SCI-E 引用 他引
1	Ye, WX; **Guo, XL**; Ma, TL	A review on electrochemical synthesized copper-based catalysts for electrochemical reduction of CO_2 to C2+ products	***CHEMICAL ENGINEERING JOURNAL*** 2021, 414: 128825.	J Review	WOS:000641371800001	13	13
					合计	13	13

被引文献 **1**
出版物类型**:** J
文献类型**:** Review
标题**:** A review on electrochemical synthesized copper-based catalysts for electrochemical reduction of CO_2 to C2+ products
作者**:** Ye, WX (Ye, Wangxiang); Guo, XL (Guo, Xiaolin); Ma, TL (Ma, Tingli)
作者地址**:** [Ye, Wangxiang; Guo, Xiaolin; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.
通讯作者地址**:** Guo, XL; Ma, TL (corresponding author), China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; Ma, TL (corresponding author), Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.
来源出版物**:** CHEMICAL ENGINEERING JOURNAL 卷**:** 414 页**:** 16 **DOI:** 10.1016/j.cej.2021.128825 出版年**:** 2021 出版日期**:** JUN 15
入藏号**:** WOS:000641371800001
核心合集中的 **"**被引频次**":** 13
语种**:** English
电子邮件地址**:** guoxiaolin@cjlu.edu.cn; tinglima123@cjlu.edu.cn
IDS 号**:** RO9PT
ISSN: 1385-8947
eISSN: 1873-3212

施引文献：**SCI-E** 总引 **13** 次，其中他引 **13** 次

第 **1** 条，共 **13** 条:
标题**:** Enhanced removal of organoarsenic by chlorination: Kinetics, effect of humic acid, and adsorbable chlorinated organoarsenic
作者**:** Wu, SS (Wu, Sisi); Yang, T (Yang, Tao); Mai, JM (Mai, Jiamin); Tang, LY (Tang, Liuyan); Liang, P (Liang, Ping); Zhu, MY (Zhu, Mengyang); Huang, C (Huang, Cui); Li, QH (Li, Qiuhua); Cheng, XX (Cheng, Xiaoxiang); Liu, MC (Liu, Minchao); Ma, J (Ma, Jun)
来源出版物**:** JOURNAL OF HAZARDOUS MATERIALS 卷**:** 422 页**:** 11 出版年**:** 2022 出版日期**:** JAN 15

第 **2** 条，共 **13** 条:
标题: Heterogeneous catalytic ozonation: The significant contribution of PZC value and wettability of the catalysts
作者: Psaltou, S (Psaltou, Savvina); Kaprara, E (Kaprara, Efthimia); Triantafyllidis, K (Triantafyllidis, Konstantinos); Mitrakas, M (Mitrakas, Manassis); Zouboulis, A (Zouboulis, Anastasios)
来源出版物: JOURNAL OF ENVIRONMENTAL CHEMICAL ENGINEERING 卷: 9 期: 5 页: 12 出版年: 2021 出版日期: OCT

第 **3** 条，共 **13** 条:
标题: A roadmap towards the development of superior photocatalysts for solar-driven CO2-to-fuels production
作者: Peng, WX (Peng, Wanxi); Nguyen, THC (Nguyen, Thi Hong Chuong); Nguyen, DL (Nguyen, Dang Le Tri); Wang, T (Wang, Ting); Tran, TVT (Tran, Thi Van Thi); Le, TH (Le, Trung Hieu); Le, HK (Le, Hai Khoa); Grace, AN (Grace, Andrews Nirmala); Singh, P (Singh, Pardeep); Raizadaa, P (Raizadaa, Pankaj); Dinh, MTN (Dinh, Minh Tuan Nguyen); Nguyen, CC (Nguyen, Chinh Chien); Kim, SY (Kim, Soo Young); Le, QV (Le, Quyet Van)
来源出版物: RENEWABLE & SUSTAINABLE ENERGY REVIEWS 卷: 148 页: 38 出版年: 2021 出版日期: SEP

第 **4** 条，共 **13** 条:
标题: Ascorbic acid enhanced ciprofloxacin degradation with nanoscale zero-valent copper activated molecular oxygen
作者: Zhang, KJ (Zhang, Kejia); Deng, J (Deng, Jing); Chen, YJ (Chen, Yijing); Xu, CC (Xu, Chengcheng); Ye, C (Ye, Cheng); Ling, X (Ling, Xiao); Li, XY (Li, Xueyan)
来源出版物: CHEMOSPHERE 卷: 278 页: 10 出版年: 2021 出版日期: SEP

第 **5** 条，共 **13** 条:
标题: Recent advances in CdS-based photocatalysts for CO2 photocatalytic conversion
作者: Yang, KH (Yang, Kaihua); Yang, ZZ (Yang, Zhongzhu); Zhang, C (Zhang, Chang); Gu, YL (Gu, Yanling); Wei, JJ (Wei, Jingjing); Li, ZH (Li, Zihao); Ma, C (Ma, Chi); Yang, X (Yang, Xu); Song, KX (Song, Kexin); Li, YM (Li, Yiming); Fang, QZ (Fang, Qianzhen); Zhou, JW (Zhou, Junwu)
来源出版物: CHEMICAL ENGINEERING JOURNAL 卷: 418 页: 24 出版年: 2021 出版日期: AUG 15

第 **6** 条，共 **13** 条:
标题: Foamed-Fe-0 via phase interface polishing by ultrasound to activate persulfate for treating triphenylmethane derivative
作者: Xu, QH (Xu, Qihui); Li, ZP (Li, Zhipeng); You, H (You, Hong); Li, HY (Li, Haoyang); Yu, YB (Yu, Yibo)
来源出版物: JOURNAL OF ENVIRONMENTAL CHEMICAL ENGINEERING 卷: 9 期: 4 页: 16 出版年: 2021 出版日期: AUG

第 **7** 条，共 **13** 条:
标题: Process modeling, techno-economic assessment, and life cycle assessment of the electrochemical reduction of CO2: a review
作者: Somoza-Tornos, A (Somoza-Tornos, Ana); Guerra, OJ (Guerra, Omar J.); Crow, AM (Crow, Allison M.); Smith, WA (Smith, Wilson A.); Hodge, BM (Hodge, Bri-Mathias)
来源出版物: ISCIENCE 卷: 24 期: 7 页: 16 出版年: 2021 出版日期: JUL 23

第 **8** 条，共 **13** 条:
标题: Recent Advances in Bimetallic Cu-Based Nanocrystals for Electrocatalytic CO2 Conversion
作者: Talukdar, B (Talukdar, Biva); Mendiratta, S (Mendiratta, Shruti); Huang, MH (Huang, Michael H.); Kuo, CH (Kuo, Chun-Hong)
来源出版物: CHEMISTRY-AN ASIAN JOURNAL 卷: 16 期: 16 页: 2168-2184 出版年: 2021 出版日期: AUG 16

第 **9** 条，共 **13** 条:
标题: CO2 electroreduction by AuCu bimetallic clusters: A first principles study
作者: Liang, XY (Liang, Xingyou); Ren, XF (Ren, Xuefeng); Guo, MM (Guo, Mingmin); Li, YQ (Li, Yanqiang); Xiong, W (Xiong, Wei); Guan, WX (Guan, Weixin); Gao, LG (Gao, Liguo); Liu, AM (Liu, Anmin)
来源出版物: INTERNATIONAL JOURNAL OF ENERGY RESEARCH 卷: 45 期: 13 页: 18684-18694 出版年: 2021 出版日期: OCT 25

第 **10** 条，共 **13** 条:
标题: A novel method to prepare copper microspheres via chemical reduction route
作者: Logutenko, OA (Logutenko, O. A.); Titkov, AI (Titkov, A. I.); Vorobyov, AM (Vorobyov, A. M.); Lyakhov, NZ (Lyakhov, N. Z.)
来源出版物: JOURNAL OF MATERIALS RESEARCH AND TECHNOLOGY-JMR&T 卷: 13 页: 1254-1265 出版年: 2021 出版日期: JUL-AUG

第 **11** 条，共 **13** 条:
标题: Enhanced Ethylene Formation from Carbon Dioxide Reduction through Sequential Catalysis on Au Decorated Cubic Cu2O Electrocatalyst
作者: Cao, XR (Cao, Xuerui); Cao, GW (Cao, Guangwei); Li, M (Li, Mei); Zhu, XL (Zhu, Xinli); Han, JY (Han, Jinyu); Ge, QF (Ge, Qingfeng); Wang, H (Wang, Hua)
来源出版物: EUROPEAN JOURNAL OF INORGANIC CHEMISTRY 卷: 2021 期: 24 页: 2353-2364 出版年: 2021 出版日期: JUN 25

第 **12** 条，共 **13** 条:
标题: A Review: Scanning Electrochemical Microscopy (SECM) for Visualizing the Real-Time Local Catalytic Activity
作者: Preet, A (Preet, Anant); Lin, TE (Lin, Tzu-En)
来源出版物: CATALYSTS 卷: 11 期: 5 页: 15 出版年: 2021 出版日期: MAY

第 **13** 条，共 **13** 条:
标题: Gas diffusion electrodes (GDEs) for electrochemical reduction of carbon dioxide, carbon monoxide, and dinitrogen to value-added products: a review
作者: Rabiee, H (Rabiee, Hesamoddin); Ge, L (Ge, Lei); Zhang, XQ (Zhang, Xueqin); Hu, SH (Hu, Shihu); Li, MR (Li, Mengran); Yuan, ZG (Yuan, Zhiguo)
来源出版物: ENERGY & ENVIRONMENTAL SCIENCE 卷: 14 期: 4 页: 1959-2008 出版年: 2021 出版日期: APR 1

说明:

引用文献中出现“作者及合作者”视为自引，其它情况视为他引。

文献检索报告
Retrieval Report

附件一：经检索《**Science Citation Index Expanded**》，下述论文被 **SCI-E** 收录。（检索时间**2022**年**9**月**9**日）

第 **1** 条，共 **2** 条：
标题**:** Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries
作者**:** Jiang, HM (Jiang, Hongmin); Wang, HJ (Wang, Hejing); Su, YT (Su, Yitian); Kang, QL (Kang, Qiaoling); Meng, XH (Meng, Xianhe); Yan, LJ (Yan, Lijing); Ma, TL (Ma, Tingli)
来源出版物**:** JOURNAL OF POWER SOURCES　卷**:** 542　文献号**:** 231818　**DOI:** 10.1016/j.jpowsour.2022.231818　出版年**:** SEP 15 2022
Web of Science 核心合集中的 **"**被引频次**":** 0
入藏号**:** WOS:000830316600001
语言**:** English
文献类型**:** Article　出版物类型**:** J
作者地址**:** [Jiang, Hongmin; Wang, Hejing; Su, Yitian; Kang, Qiaoling; Meng, Xianhe; Yan, Lijing; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
通讯作者地址**:** Yan, LJ; Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址**:** yanlijing@cjlu.edu.cn; matingli123@cjlu.edu.cn
IDS 号**:** 3E9SO
ISSN: 0378-7753　**eISSN:** 1873-2755
JCR 影响因子**:** 9.794 (2021);
JCR 期刊分区**:** ENERGY & FUELS [Q1] (2021); CHEMISTRY, PHYSICAL [Q1] (2021); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] (2021);
中科院期刊分区**:** 小类(基础版) (2021) 能源与燃料 [2]; 小类(基础版) (2021) 电化学 [2]; 小类(基础版) (2021) 物理化学 [2]; 小类(基础版) (2021) 材料科学：综合 [2]; 小类(升级版) (2021) 能源与燃料 [2]; 小类(升级版) (2021) 电化学 [2]; 小类(升级版) (2021) 物理化学 [2]; 小类(升级版) (2021) 材料科学：综合 [2]; 大类(基础版) (2021) 工程技术 [1] Top 期刊; 大类(升级版) (2021) 工程技术 [2] Top 期刊;

第 **2** 条，共 **2** 条：
标题**:** Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery
作者**:** Yan, LJ (Yan, Lijing); Liu, TF (Liu, Tiefeng); Zeng, XM (Zeng, Xiaomin); Sun, L (Sun, Lei); Meng, XH (Meng, Xianhe); Ling, M (Ling, Min); Fan, MQ (Fan, Meiqiang); Ma, TL (Ma, Tingli)
来源出版物**:** CARBON　卷**:** 187　页**:** 145-152　**DOI:** 10.1016/j.carbon.2021.11.007　提前访问日期**:** NOV 2021　出版年**:** FEB 2022
Web of Science 核心合集中的 **"**被引频次**":** 7
入藏号**:** WOS:000720850100002
语言**:** English
文献类型**:** Article　出版物类型**:** J
作者地址**:** [Yan, Lijing; Sun, Lei; Meng, Xianhe; Fan, Meiqiang; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Liu, Tiefeng] Zhejiang Univ Technol, Dept Mat Sci & Engn, Hangzhou 310014, Peoples R China.; [Zeng, Xiaomin; Ling, Min] Zhejiang Univ, Coll Chem & Biol Engn, Hangzhou 310027, Peoples R China.
通讯作者地址**:** Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址**:** matingli123@cjlu.edu.cn
IDS 号**:** XA7VR
ISSN: 0008-6223　**eISSN:** 1873-3891
JCR 影响因子**:** 11.307 (2021);
JCR 期刊分区**:** CHEMISTRY, PHYSICAL [Q1] (2021); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] (2021);
中科院期刊分区**:** 小类(基础版) (2021) 物理化学 [2]; 小类(基础版) (2021) 材料科学：综合 [2]; 小类(升级版) (2021) 物理化学 [2]; 小类(升级版) (2021) 材料科学：综合 [2]; 大类(基础版) (2021) 工程技术 [1] Top 期刊; 大类(升级版) (2021) 材料科学 [2] Top 期刊;

附件二：经检索《**Social Sciences Citation Index**》，下述论文被 **SSCI** 收录。（检索时间**2022**年**9**月**9**日）

暂无记录

附件三：经检索《**Conference Proceedings Citation Index - Science**》，下述论文被 **CPCI-S** 收录。（检索时间**2022**年**9**月**9**日）

暂无记录

附件四：经检索《**Conference Proceedings Citation index - Social Science&Humanalities**》，下述论文被 **CPCI-SSH** 收录。（检索时间**2022**年**9**月**9**日）

暂无记录

附件五：经检索《**Engineering Index**》，下述论文被 **EI** 收录。（检索时间**2022**年**9**月**9**日）

暂无记录

附件六：经检索《**Science Citation Index Expanded**》，下述论文被 **SCI-E** 引用。（检索时间**2022**年**9**月**9**日）

#	作者	标题	来源出版物	出版物类型	入藏号	SCI-E 引用	
						总引	他引
1	Jiang, HM; Wang, HJ; Su, YT; Kang, QL; Meng, XH; **Yan, LJ**; Ma, TL	Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries	***JOURNAL OF POWER SOURCES*** 2022, 542: 231818.	J Article	WOS:000830316600001	0	0
2	**Yan, LJ**; Liu, TF; Zeng, XM; Sun, L; Meng, XH; Ling, M; Fan, MQ; Ma, TL	Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery	***CARBON*** 2022, 187: 145-152.	J Article	WOS:000720850100002	0	0
					合计	0	0

被引文献 **1**
标题**:** Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries
作者**:** Jiang, HM (Jiang, Hongmin); Wang, HJ (Wang, Hejing); Su, YT (Su, Yitian); Kang, QL (Kang, Qiaoling); Meng, XH (Meng, Xianhe); Yan, LJ (Yan, Lijing); Ma, TL (Ma, Tingli)
来源出版物**:** JOURNAL OF POWER SOURCES 卷**:** 542 文献号**:** 231818 **DOI:** 10.1016/j.jpowsour.2022.231818 出版年**:** SEP 15 2022
Web of Science 核心合集中的 **"**被引频次**":** 0
入藏号**:** WOS:000830316600001
语言**:** English
文献类型**:** Article 出版物类型**:** J
作者地址**:** [Jiang, Hongmin; Wang, Hejing; Su, Yitian; Kang, Qiaoling; Meng, Xianhe; Yan, Lijing; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
通讯作者地址**:** Yan, LJ; Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址**:** yanlijing@cjlu.edu.cn; matingli123@cjlu.edu.cn
IDS 号**:** 3E9SO
ISSN: 0378-7753 **eISSN:** 1873-2755

施引文献：**SCI-E** 总引 **0** 次，其中他引 **0** 次

被引文献 **2**
标题**:** Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery
作者**:** Yan, LJ (Yan, Lijing); Liu, TF (Liu, Tiefeng); Zeng, XM (Zeng, Xiaomin); Sun, L (Sun, Lei); Meng, XH (Meng, Xianhe); Ling, M (Ling, Min); Fan, MQ (Fan, Meiqiang); Ma, TL (Ma, Tingli)
来源出版物**:** CARBON 卷**:** 187 页**:** 145-152 **DOI:** 10.1016/j.carbon.2021.11.007 提前访问日期**:** NOV 2021 出版年**:** FEB 2022
Web of Science 核心合集中的 **"**被引频次**":** 7
入藏号**:** WOS:000720850100002
语言**:** English
文献类型**:** Article 出版物类型**:** J
作者地址**:** [Yan, Lijing; Sun, Lei; Meng, Xianhe; Fan, Meiqiang; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Liu, Tiefeng] Zhejiang Univ Technol, Dept Mat Sci & Engn, Hangzhou 310014, Peoples R China.; [Zeng, Xiaomin; Ling, Min] Zhejiang Univ, Coll Chem & Biol Engn, Hangzhou 310027, Peoples R China.
通讯作者地址**:** Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址**:** matingli123@cjlu.edu.cn
IDS 号**:** XA7VR
ISSN: 0008-6223 **eISSN:** 1873-3891

施引文献：**SCI-E** 总引 **0** 次，其中他引 **0** 次

附件七：经检索《**Social Sciences Citation Index**》，下述论文被 **SSCI** 引用。（检索时间**2022**年**9**月**9**日）

#	作者	标题	来源出版物	出版物类型	入藏号	SSCI 引用	
						总引	他引
1	Jiang, HM; Wang, HJ; Su, YT; Kang, QL; Meng, XH; **Yan, LJ**; Ma, TL	Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries	***JOURNAL OF POWER SOURCES*** 2022, 542: 231818.	J Article	WOS:000830316600001	0	0
2	**Yan, LJ**; Liu, TF; Zeng, XM; Sun, L; Meng, XH; Ling, M; Fan, MQ; Ma, TL	Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery	***CARBON*** 2022, 187: 145-152.	J Article	WOS:000720850100002	0	0
					合计	0	0

被引文献 **1**

标题: Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries
作者: Jiang, HM (Jiang, Hongmin); Wang, HJ (Wang, Hejing); Su, YT (Su, Yitian); Kang, QL (Kang, Qiaoling); Meng, XH (Meng, Xianhe); Yan, LJ (Yan, Lijing); Ma, TL (Ma, Tingli)
来源出版物: JOURNAL OF POWER SOURCES 卷: 542 文献号: 231818 **DOI:** 10.1016/j.jpowsour.2022.231818 出版年: SEP 15 2022
Web of Science 核心合集中的 "被引频次": 0
入藏号: WOS:000830316600001
语言: English
文献类型: Article 出版物类型: J
作者地址: [Jiang, Hongmin; Wang, Hejing; Su, Yitian; Kang, Qiaoling; Meng, Xianhe; Yan, Lijing; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
通讯作者地址: Yan, LJ; Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址: yanlijing@cjlu.edu.cn; matingli123@cjlu.edu.cn
IDS 号: 3E9SO
ISSN: 0378-7753 **eISSN:** 1873-2755

施引文献：**SSCI** 总引 **0** 次，其中他引 **0** 次

被引文献 **2**
标题: Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery
作者: Yan, LJ (Yan, Lijing); Liu, TF (Liu, Tiefeng); Zeng, XM (Zeng, Xiaomin); Sun, L (Sun, Lei); Meng, XH (Meng, Xianhe); Ling, M (Ling, Min); Fan, MQ (Fan, Meiqiang); Ma, TL (Ma, Tingli)
来源出版物: CARBON 卷: 187 页: 145-152 **DOI:** 10.1016/j.carbon.2021.11.007 提前访问日期: NOV 2021 出版年: FEB 2022
Web of Science 核心合集中的 "被引频次": 7
入藏号: WOS:000720850100002
语言: English
文献类型: Article 出版物类型: J
作者地址: [Yan, Lijing; Sun, Lei; Meng, Xianhe; Fan, Meiqiang; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Liu, Tiefeng] Zhejiang Univ Technol, Dept Mat Sci & Engn, Hangzhou 310014, Peoples R China.; [Zeng, Xiaomin; Ling, Min] Zhejiang Univ, Coll Chem & Biol Engn, Hangzhou 310027, Peoples R China.
通讯作者地址: Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址: matingli123@cjlu.edu.cn
IDS 号: XA7VR
ISSN: 0008-6223 **eISSN:** 1873-3891

施引文献：**SSCI** 总引 **0** 次，其中他引 **0** 次

附件八：经检索《**Conference Proceedings Citation Index - Science**》，下述论文被 **CPCI-S** 引用。（检索时间**2022**年**9**月**9**日）

#	作者	标题	来源出版物	出版物类型	入藏号	CPCI-S 引用	
						总引	他引
1	Jiang, HM; Wang, HJ; Su, YT; Kang, QL; Meng, XH; **Yan, LJ**; Ma, TL	Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries	***JOURNAL OF POWER SOURCES*** 2022, 542: 231818.	J Article	WOS:000830316600001	0	0
2	**Yan, LJ**; Liu, TF; Zeng, XM; Sun, L; Meng, XH; Ling, M; Fan, MQ; Ma, TL	Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery	***CARBON*** 2022, 187: 145-152.	J Article	WOS:000720850100002	0	0
					合计	0	0

被引文献 **1**
标题: Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries
作者: Jiang, HM (Jiang, Hongmin); Wang, HJ (Wang, Hejing); Su, YT (Su, Yitian); Kang, QL (Kang, Qiaoling); Meng, XH (Meng, Xianhe); Yan, LJ (Yan, Lijing); Ma, TL (Ma, Tingli)
来源出版物: JOURNAL OF POWER SOURCES 卷: 542 文献号: 231818 **DOI:** 10.1016/j.jpowsour.2022.231818 出版年: SEP 15 2022
Web of Science 核心合集中的 "被引频次": 0
入藏号: WOS:000830316600001
语言: English
文献类型: Article 出版物类型: J
作者地址: [Jiang, Hongmin; Wang, Hejing; Su, Yitian; Kang, Qiaoling; Meng, Xianhe; Yan, Lijing; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
通讯作者地址: Yan, LJ; Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址: yanlijing@cjlu.edu.cn; matingli123@cjlu.edu.cn
IDS 号: 3E9SO
ISSN: 0378-7753 **eISSN:** 1873-2755

施引文献：**CPCI-S** 总引 **0** 次，其中他引 **0** 次

被引文献 **2**
标题: Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery

作者: Yan, LJ (Yan, Lijing); Liu, TF (Liu, Tiefeng); Zeng, XM (Zeng, Xiaomin); Sun, L (Sun, Lei); Meng, XH (Meng, Xianhe); Ling, M (Ling, Min); Fan, MQ (Fan, Meiqiang); Ma, TL (Ma, Tingli)
来源出版物: CARBON 卷: 187 页: 145-152 **DOI:** 10.1016/j.carbon.2021.11.007 提前访问日期: NOV 2021 出版年: FEB 2022
Web of Science 核心合集中的 **"被引频次":** 7
入藏号: WOS:000720850100002
语言: English
文献类型: Article 出版物类型: J
作者地址: [Yan, Lijing; Sun, Lei; Meng, Xianhe; Fan, Meiqiang; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Liu, Tiefeng] Zhejiang Univ Technol, Dept Mat Sci & Engn, Hangzhou 310014, Peoples R China.; [Zeng, Xiaomin; Ling, Min] Zhejiang Univ, Coll Chem & Biol Engn, Hangzhou 310027, Peoples R China.
通讯作者地址: Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址: matingli123@cjlu.edu.cn
IDS 号: XA7VR
ISSN: 0008-6223 **eISSN:** 1873-3891

施引文献：**CPCI-S** 总引 **0** 次，其中他引 **0** 次

附件九：经检索《**Conference Proceedings Citation index - Social Science&Humanalities**》，下述论文被 **CPCI-SSH** 引用。（检索时间**2022**年**9**月**9**日）

#	作者	标题	来源出版物	出版物类型	入藏号	**CPCI-SSH** 引用	
						总引	他引
1	Jiang, HM; Wang, HJ; Su, YT; Kang, QL; Meng, XH; **Yan, LJ**; Ma, TL	Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries	***JOURNAL OF POWER SOURCES*** 2022, 542: 231818.	J Article	WOS:000830316600001	0	0
2	**Yan, LJ**; Liu, TF; Zeng, XM; Sun, L; Meng, XH; Ling, M; Fan, MQ; Ma, TL	Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery	***CARBON*** 2022, 187: 145-152.	J Article	WOS:000720850100002	0	0
					合计	0	0

被引文献 **1**
标题: Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries
作者: Jiang, HM (Jiang, Hongmin); Wang, HJ (Wang, Hejing); Su, YT (Su, Yitian); Kang, QL (Kang, Qiaoling); Meng, XH (Meng, Xianhe); Yan, LJ (Yan, Lijing); Ma, TL (Ma, Tingli)
来源出版物: JOURNAL OF POWER SOURCES 卷: 542 文献号: 231818 **DOI:** 10.1016/j.jpowsour.2022.231818 出版年: SEP 15 2022
Web of Science 核心合集中的 **"被引频次":** 0
入藏号: WOS:000830316600001
语言: English
文献类型: Article 出版物类型: J
作者地址: [Jiang, Hongmin; Wang, Hejing; Su, Yitian; Kang, Qiaoling; Meng, Xianhe; Yan, Lijing; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
通讯作者地址: Yan, LJ; Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址: yanlijing@cjlu.edu.cn; matingli123@cjlu.edu.cn
IDS 号: 3E9SO
ISSN: 0378-7753 **eISSN:** 1873-2755

施引文献：**CPCI-SSH** 总引 **0** 次，其中他引 **0** 次

被引文献 **2**
标题: Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery
作者: Yan, LJ (Yan, Lijing); Liu, TF (Liu, Tiefeng); Zeng, XM (Zeng, Xiaomin); Sun, L (Sun, Lei); Meng, XH (Meng, Xianhe); Ling, M (Ling, Min); Fan, MQ (Fan, Meiqiang); Ma, TL (Ma, Tingli)
来源出版物: CARBON 卷: 187 页: 145-152 **DOI:** 10.1016/j.carbon.2021.11.007 提前访问日期: NOV 2021 出版年: FEB 2022
Web of Science 核心合集中的 **"被引频次":** 7
入藏号: WOS:000720850100002
语言: English
文献类型: Article 出版物类型: J
作者地址: [Yan, Lijing; Sun, Lei; Meng, Xianhe; Fan, Meiqiang; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Liu, Tiefeng] Zhejiang Univ Technol, Dept Mat Sci & Engn, Hangzhou 310014, Peoples R China.; [Zeng, Xiaomin; Ling, Min] Zhejiang Univ, Coll Chem & Biol Engn, Hangzhou 310027, Peoples R China.
通讯作者地址: Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址: matingli123@cjlu.edu.cn
IDS 号: XA7VR
ISSN: 0008-6223 **eISSN:** 1873-3891

施引文献：**CPCI-SSH** 总引 **0** 次，其中他引 **0** 次

附件十：经检索《**Web of Science Core Collection**》，下述论文被 **WOS** 核心合集 引用**: SCI-E, SSCI, A&HCI, ESCI, CPCI-S, CPCI-SSH**。（检索时间**2022**年**9**月**9**日）

#	作者	标题	来源出版物	出版物类型	入藏号	**WOS** 核心合集 引用	
						总引	他引
1	Jiang, HM; Wang, HJ; Su, YT; Kang, QL; Meng, XH; **Yan, LJ**; Ma, TL	Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries	***JOURNAL OF POWER SOURCES*** 2022, 542: 231818.	J Article	WOS:000830316600001	0	0
2	**Yan, LJ**; Liu, TF; Zeng, XM; Sun, L; Meng, XH; Ling, M; Fan, MQ; Ma, TL	Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery	***CARBON*** 2022, 187: 145-152.	J Article	WOS:000720850100002	0	0
					合计	0	0

被引文献 **1**
标题**:** Multiple health indicators assisting data-driven prediction of the later service life for lithium-ion batteries
作者**:** Jiang, HM (Jiang, Hongmin); Wang, HJ (Wang, Hejing); Su, YT (Su, Yitian); Kang, QL (Kang, Qiaoling); Meng, XH (Meng, Xianhe); Yan, LJ (Yan, Lijing); Ma, TL (Ma, Tingli)
来源出版物**:** JOURNAL OF POWER SOURCES 卷**:** 542 文献号**:** 231818 **DOI:** 10.1016/j.jpowsour.2022.231818 出版年**:** SEP 15 2022
Web of Science 核心合集中的 **"**被引频次**":** 0
入藏号**:** WOS:000830316600001
语言**:** English
文献类型**:** Article 出版物类型**:** J
作者地址**:** [Jiang, Hongmin; Wang, Hejing; Su, Yitian; Kang, Qiaoling; Meng, Xianhe; Yan, Lijing; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
通讯作者地址**:** Yan, LJ; Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址**:** yanlijing@cjlu.edu.cn; matingli123@cjlu.edu.cn
IDS 号**:** 3E9SO
ISSN: 0378-7753 **eISSN:** 1873-2755

施引文献：**WOS** 核心合集 总引 **0** 次，其中他引 **0** 次

被引文献 **2**
标题**:** Multifunctional porous carbon strategy assisting high-performance aqueous zinc-iodine battery
作者**:** Yan, LJ (Yan, Lijing); Liu, TF (Liu, Tiefeng); Zeng, XM (Zeng, Xiaomin); Sun, L (Sun, Lei); Meng, XH (Meng, Xianhe); Ling, M (Ling, Min); Fan, MQ (Fan, Meiqiang); Ma, TL (Ma, Tingli)
来源出版物**:** CARBON 卷**:** 187 页**:** 145-152 **DOI:** 10.1016/j.carbon.2021.11.007 提前访问日期**:** NOV 2021 出版年**:** FEB 2022
Web of Science 核心合集中的 **"**被引频次**":** 7
入藏号**:** WOS:000720850100002
语言**:** English
文献类型**:** Article 出版物类型**:** J
作者地址**:** [Yan, Lijing; Sun, Lei; Meng, Xianhe; Fan, Meiqiang; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Liu, Tiefeng] Zhejiang Univ Technol, Dept Mat Sci & Engn, Hangzhou 310014, Peoples R China.; [Zeng, Xiaomin; Ling, Min] Zhejiang Univ, Coll Chem & Biol Engn, Hangzhou 310027, Peoples R China.
通讯作者地址**:** Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.
电子邮件地址**:** matingli123@cjlu.edu.cn
IDS 号**:** XA7VR
ISSN: 0008-6223 **eISSN:** 1873-3891

施引文献：**WOS** 核心合集 总引 **0** 次，其中他引 **0** 次

说明：

引用文献中出现“被引文章所有作者”视为自引，其它情况视为他引。

详细结果请见附件。

中国计量大学图书馆 CJLULIB

文献检索报告
Retrieval Report

单号：RT-2021-0600

附件一：经检索《Science Citation Index Expanded》，下述论文被 SCI-E 收录。（检索时间2021年11月17日）

第 1 条，共 11 条:
出版物类型: J
文献类型: Review
标题: Recent progress in metal sulfide-based electron transport layers in perovskite solar cells
作者: He, Z (He, Zhen); Zhou, Y (Zhou, Yi); Liu, AM (Liu, Anmin); Gao, LG (Gao, Liguo); Zhang, C (Zhang, Chu); Wei, GY (Wei, Guoying); Ma, TL (Ma, Tingli)
作者地址: [He, Zhen; Zhou, Yi; Liu, Anmin; Gao, Liguo] Dalian Univ Technol, State Key Lab Fine Chem, Dalian 116023, Peoples R China.; [Zhang, Chu; Wei, Guoying; Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Kitakyushu, Fukuoka 8080196, Japan.
通讯作者地址: Gao, LG (corresponding author), Dalian Univ Technol, State Key Lab Fine Chem, Dalian 116023, Peoples R China.; Ma, TL (corresponding author), China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; Ma, TL (corresponding author), Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Kitakyushu, Fukuoka 8080196, Japan.
来源出版物: NANOSCALE 卷: 13 期: 41 页: 17272-17289 **DOI:** 10.1039/d1nr04170c 出版年: 2021 出版日期: OCT 28
入藏号: WOS:000706803600001
PubMed ID: 34643634
核心合集中的 "被引频次": 0
语种: English
电子邮件地址: liguo.gao@dlut.edu.cn; tinglima@life.kyutech.ac.jp
IDS 号: WN8HL
ISSN: 2040-3364
eISSN: 2040-3372
JCR 影响因子: 7.790 (2020); 6.895 (2019); 6.970 (2018); 7.233 (2017); 7.367 (2016); 7.760 (2015); 7.394 (2014); 6.739 (2013); 6.233 (2012); 5.914 (2011); 4.109 (2010);
JCR 期刊分区: CHEMISTRY, MULTIDISCIPLINARY [Q1] 32/178 (2020); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 62/333 (2020); NANOSCIENCE & NANOTECHNOLOGY [Q2] 29/106 (2020); PHYSICS, APPLIED [Q1] 23/160 (2020); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 50/314 (2019); NANOSCIENCE & NANOTECHNOLOGY [Q1] 25/103 (2019); PHYSICS, APPLIED [Q1] 23/155 (2019); CHEMISTRY, MULTIDISCIPLINARY [Q1] 28/177 (2019); CHEMISTRY, MULTIDISCIPLINARY [Q1] 26/172 (2018); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 41/293 (2018); NANOSCIENCE & NANOTECHNOLOGY [Q1] 20/94 (2018); PHYSICS, APPLIED [Q1] 18/148 (2018); CHEMISTRY, MULTIDISCIPLINARY [Q1] 25/171 (2017); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 30/285 (2017); NANOSCIENCE & NANOTECHNOLOGY [Q1] 18/92 (2017); PHYSICS, APPLIED [Q1] 15/146 (2017); CHEMISTRY, MULTIDISCIPLINARY [Q1] 21/166 (2016); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 23/275 (2016); NANOSCIENCE & NANOTECHNOLOGY [Q1] 13/87 (2016); PHYSICS, APPLIED [Q1] 13/148 (2016); CHEMISTRY, MULTIDISCIPLINARY [Q1] 18/163 (2015); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 23/271 (2015); NANOSCIENCE & NANOTECHNOLOGY [Q1] 12/83 (2015); PHYSICS, APPLIED [Q1] 12/145 (2015); CHEMISTRY, MULTIDISCIPLINARY [Q1] 19/157 (2014); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 21/260 (2014); NANOSCIENCE & NANOTECHNOLOGY [Q1] 10/80 (2014); PHYSICS, APPLIED [Q1] 12/144 (2014); CHEMISTRY, MULTIDISCIPLINARY [Q1] 19/148 (2013); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 20/251 (2013); NANOSCIENCE & NANOTECHNOLOGY [Q1] 12/73 (2013); PHYSICS, APPLIED [Q1] 14/136 (2013); CHEMISTRY, MULTIDISCIPLINARY [Q1] 20/152 (2012); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 19/241 (2012); NANOSCIENCE & NANOTECHNOLOGY [Q1] 12/69 (2012); PHYSICS, APPLIED [Q1] 13/128 (2012); CHEMISTRY, MULTIDISCIPLINARY [Q1] 21/154 (2011); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 18/232 (2011); NANOSCIENCE & NANOTECHNOLOGY [Q1] 11/66 (2011); PHYSICS, APPLIED [Q1] 10/125 (2011); CHEMISTRY, MULTIDISCIPLINARY [Q1] 27/147 (2010); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 27/225 (2010); NANOSCIENCE & NANOTECHNOLOGY [Q1] 15/64 (2010); PHYSICS, APPLIED [Q1] 13/118 (2010);
中科院期刊分区: 小类(基础版) (2020) 纳米科技 [3]; 小类(基础版) (2020) 物理：应用 [2]; 小类(基础版) (2020) 材料科学：综合 [2]; 小类(基础版) (2020) 化学综合 [2]; 小类(基础版) (2019) 纳米科技 [3]; 小类(基础版) (2019) 物理：应用 [2]; 小类(基础版) (2019) 材料科学：综合 [2]; 小类(基础版) (2019) 化学综合 [2]; 小类(基础版) (2018) 纳米科技 [2]; 小类(基础版) (2018) 物理：应用 [2]; 小类(基础版) (2018) 材料科学：综合 [2]; 小类(基础版) (2018) 化学综合 [2]; 小类(基础版) (2017) 纳米科技 [2]; 小类(基础版) (2017) 物理：应用 [2]; 小类(基础版) (2017) 材料科学：综合 [2]; 小类(基础版) (2017) 化学综合 [2]; 小类(基础版) (2016) 纳米科技 [2]; 小类(基础版) (2016) 物理：应用 [2]; 小类(基础版) (2016) 材料科学：综合 [2]; 小类(基础版) (2016) 化学综合 [2]; 小类(基础版) (2015) 纳米科技 [2]; 小类(基础版) (2015) 物理：应用 [2]; 小类(基础版) (2015) 材料科学：综合 [2]; 小类(基础版) (2015) 化学综合 [2]; 小类(基础版) (2014) 纳米科技 [3]; 小类(基础版) (2014) 物理：应用 [2]; 小类(基础版) (2014) 材料科学：综合 [2]; 小类(基础版) (2014) 化学综合 [3]; 小类(基础版) (2013) 纳米科技 [3]; 小类(基础版) (2013) 物理：应用 [2]; 小类(基础版) (2013) 材料科学：综合 [2]; 小类(基础版) (2013) 化学综合 [3]; 小类(基础版) (2012) 纳米科技 [3]; 小类(基础版) (2012) 物理：应用 [2]; 小类(基础版) (2012) 材料科学：综合 [2]; 小类(基础版) (2012) 化学综合 [2]; 小类(基础版) (2011) 纳米科技 [3]; 小类(基础版) (2011) 物理：应用 [2]; 小类(基础版) (2011) 材料科学：综合 [2]; 小类(基础版) (2011) 化学综合 [3]; 大类(基础版) (2020) 工程技术 [1] Top 期刊; 大类(基础版) (2019) 工程技术 [1] Top 期刊; 大类(基础版) (2018) 工程技术 [1] Top 期刊; 大类(基础版) (2017) 工程技术 [1] Top 期刊; 大类(基础版) (2016) 工程技术 [1] Top 期刊; 大类(基础版) (2015) 工程技术 [1] Top 期刊; 大类(基础版) (2014) 工程技术 [1] Top 期刊; 大类(基础版) (2013) 工程技术 [1] Top 期刊; 大类(基础版) (2012) 工程技术 [1] Top 期刊; 大类(基础版) (2011) 工程技术 [1] Top 期刊;

第 2 条，共 11 条:

SoL.RRL 的检索证明

出版物类型: J
文献类型: Review
标题: Recent Progress in Perovskite Solar Cells Modified by Sulfur Compounds
作者: Zhou, Y (Zhou, Yi); Liu, CY (Liu, Caiyun); Meng, FN (Meng, Fanning); Zhang, C (Zhang, Chu); Wei, GY (Wei, Guoying); Gao, LG (Gao, Liguo); Ma, TL (Ma, Tingli)
作者地址: [Zhang, Chu; Wei, Guoying; Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; [Zhou, Yi; Liu, Caiyun; Meng, Fanning; Gao, Liguo] Dalian Univ Technol, State Key Lab Fine Chem, Dalian 116023, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst

Engn, Kitakyushu, Fukuoka 8080196, Japan.
通讯作者地址: Ma, TL (corresponding author), China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; Gao, LG (corresponding author), Dalian Univ Technol, State Key Lab Fine Chem, Dalian 116023, Peoples R China.; Ma, TL (corresponding author), Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Kitakyushu, Fukuoka 8080196, Japan.
来源出版物: SOLAR RRL 卷: 5 期: 4 **DOI:** 10.1002/solr.202000713 出版年: 2021 出版日期: APR
入藏号: WOS:000616496100001
核心合集中的 "被引频次": 4
语种: English
电子邮件地址: liguo.gao@dlut.edu.cn; tinglima@life.kyutech.ac.jp
IDS 号: RJ6XQ
ISSN: 2367-198X
JCR 影响因子: 8.582 (2020); 7.527 (2019);
JCR 期刊分区: ENERGY & FUELS [Q1] 14/114 (2020); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 47/333 (2020); ENERGY & FUELS [Q1] 14/112 (2019); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 43/314 (2019);
中科院期刊分区: 小类(基础版) (2020) 能源与燃料 [2]; 小类(基础版) (2020) 材料科学：综合 [2]; 大类(基础版) (2020) 工程技术 [1] Top 期刊;

第 **3** 条，共 **11** 条:
出版物类型: J
文献类型: Article
标题: A two-dimensional MXene-supported metal-organic framework for highly selective ambient electrocatalytic nitrogen reduction
作者: Liang, XY (Liang, Xingyou); Ren, XF (Ren, Xuefeng); Yang, QY (Yang, Qiyue); Gao, LG (Gao, Liguo); Gao, MF (Gao, Mengfan); Yang, YA (Yang, Yanan); Zhu, HD (Zhu, Haiding); Li, GX (Li, Guangxin); Ma, TL (Ma, Tingli); Liu, AM (Liu, Anmin)
作者地址: [Liang, Xingyou; Yang, Qiyue; Gao, Liguo; Gao, Mengfan; Yang, Yanan; Zhu, Haiding; Li, Guangxin; Liu, Anmin] Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Dalian, Peoples R China.; [Ren, Xuefeng] Dalian Univ Technol, Sch Ocean Sci & Technol, Panjin 124221, Peoples R China.; [Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, 2-4 Hibikino, Kitakyushu, Fukuoka 8080196, Japan.
通讯作者地址: Liu, AM (corresponding author), Dalian Univ Technol, Sch Chem Engn, State Key Lab Fine Chem, Dalian, Peoples R China.; Ren, XF (corresponding author), Dalian Univ Technol, Sch Ocean Sci & Technol, Panjin 124221, Peoples R China.
来源出版物: NANOSCALE 卷: 13 期: 5 页: 2843-2848 **DOI:** 10.1039/d0nr08744k 出版年: 2021 出版日期: FEB 7
入藏号: WOS:000617768200009
PubMed ID: 33522552
核心合集中的 "被引频次": 4
语种: English
电子邮件地址: renxuefeng@dlut.edu.cn; liuanmin@dlut.edu.cn
IDS 号: QG7MR
ISSN: 2040-3364
eISSN: 2040-3372
JCR 影响因子: 7.790 (2020); 6.895 (2019); 6.970 (2018); 7.233 (2017); 7.367 (2016); 7.760 (2015); 7.394 (2014); 6.739 (2013); 6.233 (2012); 5.914 (2011); 4.109 (2010);
JCR 期刊分区: CHEMISTRY, MULTIDISCIPLINARY [Q1] 32/178 (2020); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 62/333 (2020); NANOSCIENCE & NANOTECHNOLOGY [Q2] 29/106 (2020); PHYSICS, APPLIED [Q1] 23/160 (2020); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 50/314 (2019); NANOSCIENCE & NANOTECHNOLOGY [Q1] 25/103 (2019); PHYSICS, APPLIED [Q1] 23/155 (2019); CHEMISTRY, MULTIDISCIPLINARY [Q1] 28/177 (2019); CHEMISTRY, MULTIDISCIPLINARY [Q1] 26/172 (2018); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 41/293 (2018); NANOSCIENCE & NANOTECHNOLOGY [Q1] 20/94 (2018); PHYSICS, APPLIED [Q1] 18/148 (2018); CHEMISTRY, MULTIDISCIPLINARY [Q1] 25/171 (2017); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 30/285 (2017); NANOSCIENCE & NANOTECHNOLOGY [Q1] 18/92 (2017); PHYSICS, APPLIED [Q1] 15/146 (2017); CHEMISTRY, MULTIDISCIPLINARY [Q1] 21/166 (2016); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 23/275 (2016); NANOSCIENCE & NANOTECHNOLOGY [Q1] 13/87 (2016); PHYSICS, APPLIED [Q1] 13/148 (2016); CHEMISTRY, MULTIDISCIPLINARY [Q1] 18/163 (2015); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 23/271 (2015); NANOSCIENCE & NANOTECHNOLOGY [Q1] 12/83 (2015); PHYSICS, APPLIED [Q1] 12/145 (2015); CHEMISTRY, MULTIDISCIPLINARY [Q1] 19/157 (2014); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 21/260 (2014); NANOSCIENCE & NANOTECHNOLOGY [Q1] 10/80 (2014); PHYSICS, APPLIED [Q1] 12/144 (2014); CHEMISTRY, MULTIDISCIPLINARY [Q1] 19/148 (2013); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 20/251 (2013); NANOSCIENCE & NANOTECHNOLOGY [Q1] 12/73 (2013); PHYSICS, APPLIED [Q1] 14/136 (2013); CHEMISTRY, MULTIDISCIPLINARY [Q1] 20/152 (2012); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 19/241 (2012); NANOSCIENCE & NANOTECHNOLOGY [Q1] 12/69 (2012); PHYSICS, APPLIED [Q1] 13/128 (2012); CHEMISTRY, MULTIDISCIPLINARY [Q1] 21/154 (2011); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 18/232 (2011); NANOSCIENCE & NANOTECHNOLOGY [Q1] 11/66 (2011); PHYSICS, APPLIED [Q1] 10/125 (2011); CHEMISTRY, MULTIDISCIPLINARY [Q1] 27/147 (2010); MATERIALS SCIENCE, MULTIDISCIPLINARY [Q1] 27/225 (2010); NANOSCIENCE & NANOTECHNOLOGY [Q1] 15/64 (2010); PHYSICS, APPLIED [Q1] 13/118 (2010);
中科院期刊分区: 小类(基础版) (2020) 纳米科技 [3]; 小类(基础版) (2020) 物理：应用 [2]; 小类(基础版) (2020) 材料科学：综合 [2]; 小类(基础版) (2020) 化学综合 [2]; 小类(基础版) (2019) 纳米科技 [3]; 小类(基础版) (2019) 物理：应用 [2]; 小类(基础版) (2019) 材料科学：综合 [2]; 小类(基础版) (2019) 化学综合 [2]; 小类(基础版) (2018) 纳米科技 [2]; 小类(基础版) (2018) 物理：应用 [2]; 小类(基础版) (2018) 材料科学：综合 [2]; 小类(基础版) (2018) 化学综合 [2]; 小类(基础版) (2017) 纳米科技 [2]; 小类(基础版) (2017) 物理：应用 [2]; 小类(基础版) (2017) 材料科学：综合 [2]; 小类(基础版) (2017) 化学综合 [2]; 小类(基础版) (2016) 纳米科技 [2]; 小类(基础版) (2016) 物理：应用 [2]; 小类(基础版) (2016) 材料科学：综合 [2]; 小类(基础版) (2016) 化学综合 [2]; 小类(基础版) (2015) 纳米科技 [2]; 小类(基础版) (2015) 物理：应用 [2]; 小类(基础版) (2015) 材料科学：综合 [2]; 小类(基础版) (2015) 化学综合 [2]; 小类(基础版) (2014) 纳米科技 [3]; 小类(基础版) (2014) 物理：应用 [2]; 小类(基础版) (2014) 材料科学：综合 [2]; 小类(基础版) (2014) 化学综合 [3]; 小类(基础版) (2013) 纳米科技 [3]; 小类(基础版) (2013) 物理：应用 [2]; 小类(基础版) (2013) 材料科学：综合 [2]; 小类(基础版) (2013) 化学综合 [3]; 小类(基础版) (2012) 纳米科技 [3]; 小类(基础版) (2012) 物理：应用 [2]; 小类(基础版) (2012) 材料科学：综合 [2]; 小类(基础版) (2012) 化学综合 [2]; 小类(基础版) (2011) 纳米科技 [3]; 小类(基础版) (2011) 物理：应用 [2]; 小类(基础版) (2011) 材料科学：综合 [2]; 小类(基础版) (2011) 化学综合 [3]; 大类(基础版) (2020) 工程技术 [1] Top 期刊; 大类(基础版) (2019) 工程技术 [1] Top 期刊; 大类(基础版) (2018) 工程技术 [1] Top 期刊; 大类(基础版) (2017) 工程技术 [1] Top 期刊; 大类(基础版) (2016) 工程技术 [1] Top 期刊; 大类(基础版) (2015) 工程技术 [1] Top 期刊; 大类(基础版) (2014) 工程技术 [1] Top 期刊; 大类(基础版) (2013) 工程技术 [1] Top 期刊; 大类(基础版) (2012) 工程技术 [1] Top 期刊; 大类(基础版) (2011) 工程技术 [1] Top 期刊;

第 **4** 条，共 **11** 条:
出版物类型: J
文献类型: Review
标题: Interface engineering of transitional metal sulfide-MoS2 heterostructure composites as effective electrocatalysts for water-splitting

文献检索报告
Retrieval Report

附件一：经检索《**Science Citation Index Expanded**》，下述论文被 **SCI-E** 收录。（检索时间**2022**年**9**月**29**日）

第 **1** 条，共 **1** 条：
标题**:** Over 23% power conversion efficiency of planar perovskite solar cells via bulk heterojunction design
作者**:** Yang, SZ (Yang, Shuzhang); Han, QJ (Han, Qianji); Wang, L (Wang, Liang); Zhou, Y (Zhou, Yi); Yu, FY (Yu, Fengyang); Li, CQ (Li, Chuanqing); Cai, XY (Cai, Xiaoyong); Gao, LG (Gao, Liguo); Zhang, C (Zhang, Chu); Ma, TL (Ma, Tingli)
来源出版物**:** CHEMICAL ENGINEERING JOURNAL 卷**:** 426 文献号**:** 131838 **DOI:** 10.1016/j.cej.2021.131838 提前访问日期**:** AUG 2021 出版年**:** DEC 15 2021
Web of Science 核心合集中的 **"**被引频次**":** 6
入藏号**:** WOS:000729129400004
语言**:** English
文献类型**:** Article 出版物类型**:** J
作者地址**:** [Yang, Shuzhang; Han, Qianji; Wang, Liang; Yu, Fengyang; Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Wakamatsu Ku, 2-4 Hibikino, Kitakyushu, Japan.; [Yang, Shuzhang; Han, Qianji; Wang, Liang; Yu, Fengyang; Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Wakamatsu Ku, 2-4 Hibikino, Fukuoka, Japan.; [Zhou, Yi; Gao, Liguo] Dalian Univ Technol, Sch Chem Engn, Panjin 124221, Peoples R China.; [Li, Chuanqing] Shanghai Normal Univ, Dept Phys, Shanghai 200234, Peoples R China.; [Cai, Xiaoyong] Natl Ctr Nanosci & Technol, CAS Ctr Excellence Nanosci, CAS Key Lab Standardizat & Measurement Nanotechno, Beijing 100190, Peoples R China.; [Zhang, Chu; Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.
通讯作者地址**:** Wang, L; Li, CQ; Ma, TL (通讯作者)，Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Wakamatsu Ku, 2-4 Hibikino, Kitakyushu, Japan.; Wang, L; Li, CQ; Ma, TL (通讯作者)，Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Wakamatsu Ku, 2-4 Hibikino, Fukuoka, Japan.
电子邮件地址**:** wangliang@life.kyutech.ac.jp; lichuanqing@shnu.edu.cn; tinglima@life.kyutech.ac.jp
IDS 号**:** XM9HV
ISSN: 1385-8947 **eISSN:** 1873-3212
中科院期刊分区**:** 小类(基础版) (2021) 工程：环境 [1]; 小类(基础版) (2021) 工程：化工 [1]; 大类(基础版) (2021) 工程技术 [1] Top 期刊;

附件二：经检索《**Science Citation Index Expanded**》，下述论文被 **SCI-E** 引用。（检索时间**2022**年**9**月**29**日）

#	作者	标题	来源出版物	出版物类型	入藏号	SCI-E 引用 总引	SCI-E 引用 他引
1	Yang, SZ; Han, QJ; Wang, L; Zhou, Y; Yu, FY; Li, CQ; Cai, XY; Gao, LG; Zhang, C; **Ma, TL**	Over 23% power conversion efficiency of planar perovskite solar cells via bulk heterojunction design	***CHEMICAL ENGINEERING JOURNAL*** 2021, 426: 131838.	J Article	WOS:000729129400004	6	6
					合计	6	6

被引文献 **1**
标题**:** Over 23% power conversion efficiency of planar perovskite solar cells via bulk heterojunction design
作者**:** Yang, SZ (Yang, Shuzhang); Han, QJ (Han, Qianji); Wang, L (Wang, Liang); Zhou, Y (Zhou, Yi); Yu, FY (Yu, Fengyang); Li, CQ (Li, Chuanqing); Cai, XY (Cai, Xiaoyong); Gao, LG (Gao, Liguo); Zhang, C (Zhang, Chu); Ma, TL (Ma, Tingli)
来源出版物**:** CHEMICAL ENGINEERING JOURNAL 卷**:** 426 文献号**:** 131838 **DOI:** 10.1016/j.cej.2021.131838 提前访问日期**:** AUG 2021 出版年**:** DEC 15 2021
Web of Science 核心合集中的 **"**被引频次**":** 6
入藏号**:** WOS:000729129400004
语言**:** English
文献类型**:** Article 出版物类型**:** J
作者地址**:** [Yang, Shuzhang; Han, Qianji; Wang, Liang; Yu, Fengyang; Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Wakamatsu Ku, 2-4 Hibikino, Kitakyushu, Japan.; [Yang, Shuzhang; Han, Qianji; Wang, Liang; Yu, Fengyang; Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Wakamatsu Ku, 2-4 Hibikino, Fukuoka, Japan.; [Zhou, Yi; Gao, Liguo] Dalian Univ Technol, Sch Chem Engn, Panjin 124221, Peoples R China.; [Li, Chuanqing] Shanghai Normal Univ, Dept Phys, Shanghai 200234, Peoples R China.; [Cai, Xiaoyong] Natl Ctr Nanosci & Technol, CAS Ctr Excellence Nanosci, CAS Key Lab Standardizat & Measurement Nanotechno, Beijing 100190, Peoples R China.; [Zhang, Chu; Ma, Tingli] China Jiliang Univ, Dept Mat Sci & Engn, Hangzhou 310018, Peoples R China.
通讯作者地址**:** Wang, L; Li, CQ; Ma, TL (通讯作者)，Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Wakamatsu Ku, 2-4 Hibikino, Kitakyushu, Japan.; Wang, L; Li, CQ; Ma, TL (通讯作者)，Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Wakamatsu Ku, 2-4 Hibikino, Fukuoka, Japan.
电子邮件地址**:** wangliang@life.kyutech.ac.jp; lichuanqing@shnu.edu.cn; tinglima@life.kyutech.ac.jp
IDS 号**:** XM9HV
ISSN: 1385-8947 **eISSN:** 1873-3212

施引文献：**SCI-E** 总引 **6** 次，其中他引 **6** 次
第 **1** 条，共 **6** 条：
标题**:** Enhanced Efficiency and Stability of n-i-p Perovskite Solar Cells by Incorporation of Fluorinated Graphene in the Spiro-OMeTAD Hole Transport Layer
作者**:** Lou, Q (Lou, Qiang); Lou, G (Lou, Gang); Guo, HL (Guo, Hailing); Sun, T (Sun, Tian); Wang, CY (Wang, Chunyun); Chai, GD (Chai, Gaoda); Chen, X (Chen, Xia); Yang, GS (Yang, Guoshen); Guo, YZ (Guo, Yuzheng); Zhou, H (Zhou, Hang)

来源出版物: ADVANCED ENERGY MATERIALS　卷: 12　期: 36　文献号: 2201344　提前访问日期: AUG 2022　出版年: SEP 2022
第 **2** 条，共 **6** 条:
标题: Synergistic Effect of Anti-Solvent and Component Engineering for Effective Passivation to Attain Highly Stable Perovskite Solar Cells
作者: Cheng, YT (Cheng, Yetai); Wei, QB (Wei, Qingbo); Ye, ZW (Ye, Zhangwen); Zhang, XY (Zhang, Xinyu); Ji, PX (Ji, Peixin); Wang, NN (Wang, Nannan); Zan, LX (Zan, Lingxing); Fu, F (Fu, Feng); Liu, SZ (Liu, Shengzhong (Frank))
来源出版物: SOLAR RRL　卷: 6　期: 9　文献号: 2200418　提前访问日期: JUL 2022　出版年: SEP 2022
第 **3** 条，共 **6** 条:
标题: Optoelectronic Enhancement of Perovskite Solar Cells through the Incorporation of Plasmonic Particles
作者: Saheed, MSM (Saheed, Mohamed Salleh Mohamed); Mohamed, NM (Mohamed, Norani Muti); Singh, BSM (Singh, Balbir Singh Mahinder); Saheed, MSM (Saheed, Mohamed Shuaib Mohamed); Jose, R (Jose, Rajan)
来源出版物: MICROMACHINES　卷: 13　期: 7　文献号: 999　出版年: JUL 2022
第 **4** 条，共 **6** 条:
标题: The high open-circuit voltage of perovskite solar cells: a review
作者: Guo, ZL (Guo, Zhanglin); Jena, AK (Jena, Ajay Kumar); Kim, GM (Kim, Gyu Min); Miyasaka, T (Miyasaka, Tsutomu)
来源出版物: ENERGY & ENVIRONMENTAL SCIENCE　卷: 15　期: 8　页: 3171-3222　提前访问日期: JUN 2022　出版年: AUG 11 2022
第 **5** 条，共 **6** 条:
标题: Developments on Perovskite Solar Cells (PSCs): A Critical Review
作者: Lekesi, LP (Lekesi, Lehlohonolo P.); Koao, LF (Koao, Lehlohonolo F.); Motloung, SV (Motloung, Setumo V.); Motaung, TE (Motaung, Tshwafo E.); Malevu, T (Malevu, Thembinkosi)
来源出版物: APPLIED SCIENCES-BASEL　卷: 12　期: 2　文献号: 672　出版年: JAN 2022
第 **6** 条，共 **6** 条:
标题: Enhancing the performance of n-i-p perovskite solar cells by introducing hydroxyethylpiperazine ethane sulfonic acid for interfacial adjustment
作者: Zhang, PT (Zhang, Putao); Chen, YM (Chen, Yiming); Wu, SH (Wu, Shenghan); Li, XH (Li, Xiaohui); Liu, MY (Liu, Meiyue); Li, SJ (Li, Shengjun)
来源出版物: NANOSCALE　卷: 14　期: 1　页: 35-41　提前访问日期: NOV 2021　出版年: DEC 23 2021

说明:

引用文献中出现"被引文章所有作者"视为自引，其它情况视为他引。

详细结果请见附件。

文献检索报告
Retrieval Report

单号：**RT-2022-1126**

附件一：经检索《**Science Citation Index Expanded**》，下述论文被 **SCI-E** 收录。（检索时间**2022**年**9**月**9**日）

第 **1** 条，共 **1** 条：

标题**:** Simulated solar light-driven photothermal preferential oxidation of carbon monoxide in H-2-rich streams over fast-synthesized CuCeO2-x nanorods

作者**:** Guo, XL (Guo, Xiaolin); Ye, WX (Ye, Wangxiang); Chen, Z' (Chen, Zi 'ang); Zhou, A (Zhou, Ang); Jin, DF (Jin, Dingfeng); Ma, TL (Ma, Tingli)

来源出版物**:** APPLIED CATALYSIS B-ENVIRONMENTAL 卷**:** 310 文献号**:** 121334 **DOI:** 10.1016/j.apcatb.2022.121334 出版年**:** AUG 5 2022

Web of Science 核心合集中的 **"**被引频次**":** 0

入藏号**:** WOS:000804060800002

语言**:** English

文献类型**:** Article 出版物类型**:** J

作者地址**:** [Guo, Xiaolin; Ye, Wangxiang; Chen, Zi 'ang; Zhou, Ang; Jin, Dingfeng; Ma, Tingli] China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; [Ma, Tingli] Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Wakamatsu, 2-4 Hibikino, Kitakyushu, Japan.

通讯作者地址**:** Ma, TL (通讯作者)，China Jiliang Univ, Coll Mat & Chem, Hangzhou 310018, Peoples R China.; Ma, TL (通讯作者)，Kyushu Inst Technol, Grad Sch Life Sci & Syst Engn, Wakamatsu, 2-4 Hibikino, Kitakyushu, Japan.

电子邮件地址**:** matingli123@cjlu.edu.cn

IDS 号**:** 1S4ZS

ISSN: 0926-3373 **eISSN:** 1873-3883

JCR 影响因子**:** 24.319 (2021);

JCR 期刊分区**:** ENGINEERING, ENVIRONMENTAL [Q1] (2021); ENGINEERING, CHEMICAL [Q1] (2021); CHEMISTRY, PHYSICAL [Q1] (2021);

中科院期刊分区**:** 小类(升级版) (2021) 物理化学 [1]; 小类(升级版) (2021) 工程：环境 [1]; 小类(升级版) (2021) 工程：化工 [1]; 大类(升级版) (2021) 化学 [1] Top 期刊;

附件二：经检索《**Social Sciences Citation Index**》，下述论文被 **SSCI** 收录。（检索时间**2022**年**9**月**9**日）

暂无记录

详细结果请见附件。

河北省科学技术奖

证 书

为表彰河北省科学技术奖获得者，特颁发此证书。

项目名称：染料敏化太阳能电池廉价高效对电极的构建及性能优化

奖种类别：自然科学奖

奖励等级：一等

获 奖 者：马廷丽

河北省人民政府

2018 年 3 月 26 日

2017年度•证书号：2017ZR1002-2

证书号第4308704号

发明专利证书

发 明 名 称：一种用于氮硼掺杂碳纤维及复合电极制备的浆料稳定剂

发　明　人：曹江行;陈玥希;张佳颖;梁攀飞;李宁霞;马廷丽;张晶晶
范美强

专　利　号：ZL 2019 1 1211793.0

专利申请日：2019年12月02日

专 利 权 人：中国计量大学

地　　　址：310018 浙江省杭州市江干区下沙高教园区学源街258号中国计量大学

授权公告日：2021年03月19日　　　授权公告号：CN 110890547 B

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局长
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国家知识产权局
2021年03月19日

其他事项参见续页

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申请日时本专利记载的申请人、发明人信息如下：

申请人：

中国计量大学

发明人：

陈玥希；曹江行；张佳颖；梁攀飞；李宁霞；马廷丽；张晶晶；范美强

证书号第4673818号

发明专利证书

发明名称：一种以泡沫导电网为载体合成硅电极的制备工艺

发　明　人：范美强;李婷;马廷丽;李超;张晶晶;吕春菊

专　利　号：ZL 2018 1 1449745.0

专利申请日：2018年11月30日

专利权人：中国计量大学

地　　址：310018 浙江省杭州市江干区下沙高教园区学源街258号

授权公告日：2021年09月10日　　　授权公告号：CN 109546090 B

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局长
申长雨

国家知识产权局
2021年09月10日

其他事项参见续页

证书号第4673818号

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申请日时本专利记载的申请人、发明人信息如下：

申请人：

中国计量大学

发明人：

范美强；李婷；马廷丽；李超；张晶晶；吕春菊

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发　明　人：范美强;李婷;马廷丽;吕春菊;李超;张晶晶

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专利权人：中国计量大学

地　　址：310018 浙江省杭州市江干区下沙高教园区学源街258号

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申请人：

中国计量大学

发明人：

范美强；李婷；马廷丽；吕春菊；李超；张晶晶