

ESI 中能源领域热点论文信息快报

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中国科学院文献情报中心咨询服务部

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ESI 中能源领域热点论文信息快报

——基于 2021 年 5 月更新数据

ESI (Essential Science Indicators) 热点论文指近两个月内被引次数高居前千分之一的 SCI 文章, 即最近两个月内最受关注的文章。

本期入榜文章是 2021 年 4 月至 5 月两个月内被引次数排名前千分之一的文章, 数据更新时间为 2021 年 5 月 17 日。

本期 ESI 发布的能源领域热点论文共计 199 篇, 其中首次入榜文章 107 篇。单篇最高被引 1544 次, 最低被引 3 次。被引 1544 次的文章标题为“**Single-Junction Organic Solar Cell with over 15% Efficiency Using Fused-Ring Acceptor with Electron-Deficient Core**”, 发表在 Cell Press 旗下的能源旗舰期刊 *JOULE* (2009 年影响因子 29.155) 上。文章的第一作者为中南大学的袁俊, 研究团队由中南大学邹应萍研究团队、中国科学院化学研究所李永舫研究团队、华南理工大学曹镛和叶轩立研究团队组成, 设计合成了一种基于苯并噻二唑为核的 DAD 结构稠环的 A-DAD-A 型非富勒烯有机受体光伏材料 Y6, 制备了正向/反向器件均为 15.7% 光电转换效率的单结有机太阳能电池, 验证效率为 14.9%, 为已报道单结有机太阳能电池效率的世界最高纪录。

首次入榜的文章¹有:

24. 气体扩散电极上的二氧化碳还原以及为什么必须在商业相关条件下评估催化性能

38. 一种以 MOF 为主体的高度可逆无枝晶锌金属负极

39. 用于析氧反应的层状双氢氧化物电催化剂最新进展

¹ 按照被引频次排序, 仅列举排名 TOP15 文章

41. 氢化物在储氢和压缩中的应用：成就、前景和观点
42. 镁基储氢材料：过去、现在和未来
49. 由项链状 N 掺杂多级孔空心碳制成的独立式薄膜用于钾离子电
池
51. 双盐液态电解质助力长寿命无枝晶无负极金属锂软包电池
53. “房屋架构”复合金属锂负极构筑长循环金属锂电池
54. 只含原子分散铁活性位点的高性能燃料电池阴极
57. 可再生能源消费和金融发展对中东和北非地区二氧化碳排放和
经济增长的影响：面板向量自回归 (PVAR) 分析
58. 氢气的大规模储存技术
59. 高性能锌金属负极—离子迁移动力学及界面稳定性的控制
60. 可再生能源预测的深度学习综述
66. 生物碳基材料在能量储存与转换中的应用
71. 用于氢氧化物交换膜燃料电池的聚（芳基哌啶）膜和离聚物
该领域所有热点文章的详细信息请见附表（按文章被引次数排列）。

附表：ESI 中能源领域热点论文列表（2021 年 5 月更新）

注：红色为首次入榜文章，黑色在往期亦是热点文章

序号	题目	第一作者及单位	期刊及其影响因子 ²	原文或摘要链接	单篇被引
1	Single-Junction Organic Solar Cell with over 15% Efficiency Using Fused-Ring Acceptor with Electron-Deficient Core	Yuan, Jun Cent S Univ	JOULE 29.155	https://www.cell.com/joule/pdf/S2542-4351(19)30032-7.pdf	1544
2	Pathways for practical high-energy long-cycling lithium metal batteries	Liu, Jun Pacific Northwest Natl Lab	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0338-x	573
3	Methylammonium Chloride Induces Intermediate Phase Stabilization for Efficient Perovskite Solar Cells	Kim, Minjin KIER	JOULE 29.155	https://www.cell.com/joule/pdf/S2542-4351(19)30305-8.pdf	393
4	Solar cell efficiency tables (version 54)	Green, Martin A. Univ New South Wales	PROGRESS IN PHOTOVOLTAICS 7.690	https://www.cell.com/joule/pdf/S2542-4351(19)30032-7.pdf	379
5	High electronic conductivity as the origin of lithium dendrite formation within solid electrolytes	Han, Fudong Univ Maryland	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-018-0312-z	347
6	Solar absorber material and system designs for photothermal water vaporization towards clean water and energy production	Gao, Minmin Natl Univ Singapore	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c8ee01146j#!divAbstract	344

² 数据来源：2019 年 Journal Citation Report (JCR) 公布的影响因子数据

7	The role of renewable energy in the global energy transformation	Gielen, Dolf Int Renewable Energy Agcy IRENA	ENERGY STRATEGY REVIEWS 3.895	https://www.sciencedirect.com/science/article/pii/S2211467X19300082	314
8	Solar cell efficiency tables (Version 55)	Green, Martin A. Univ New South Wales	PROGRESS IN PHOTOVOLTAICS 7.690	https://onlinelibrary.wiley.com/doi/full/10.1002/pip.3228	289
9	Hydrogen energy, economy and storage: Review and recommendation	Abe, J. O. Tshwane Univ Technol	INTERNATIONAL JOURNAL OF HYDROGEN ENERGY 4.939	https://www.sciencedirect.com/science/article/pii/S036031991931465X	284
10	Issues and opportunities facing aqueous zinc-ion batteries	Tang, Boya Cent S Univ	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee02526j#!divAbstract	254
11	Challenges and opportunities towards fast-charging battery materials	Liu, Yayuan Stanford Univ	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0405-3	250
12	Alkyl Chain Tuning of Small Molecule Acceptors for Efficient Organic Solar Cells	Jiang, Kui Cent S Univ	JOULE 29.155	https://www.sciencedirect.com/science/article/pii/S2542435119304702	243
13	Advances and challenges in understanding the electrocatalytic conversion of carbon dioxide to fuels	Birdja, Yuvraj Y. Leiden Univ	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0450-y	242
14	Cation and anion immobilization through chemical bonding enhancement with fluorides for stable halide perovskite solar cells	Li, Nengxu Peking Univ	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0382-6	241

15	A review on recent advances in hybrid supercapacitors: Design, fabrication and applications	Muzaffar, Aqib BS Abdur Rahman Crescent Inst Sci & Technol	RENEWABLE & SUSTAINABLE ENERGY REVIEWS 12.110	https://www.sciencedirect.com/science/article/pii/S1364032118307299	239
16	Semiconductor polymeric graphitic carbon nitride photocatalysts: the "holy grail" for the photocatalytic hydrogen evolution reaction under visible light	Liao, Guangfu Sun Yat Sen Univ	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee00717b/unauth#!divAbstract	239
17	Chemical and structural origin of lattice oxygen oxidation in Co-Zn oxyhydroxide oxygen evolution electrocatalysts	Huang, Zhen-Feng Nanyang Technol Univ	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0355-9	237
18	Over 17% efficiency ternary organic solar cells enabled by two non-fullerene acceptors working in an alloy-like model	Zhan, Lingling Zhejiang Univ	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2020/ee/c9ee03710a#!divAbstract	215
19	Recent progress made in the mechanism comprehension and design of electrocatalysts for alkaline water splitting	Hu, Congling Tianjin Univ	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee01202h#!divAbstract	214
20	Advances and issues in developing salt-concentrated battery electrolytes	Yamada, Yuki Univ Tokyo	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0336-z	213
21	Optimal sizing and location based on economic parameters for an off-grid application of a hybrid system with photovoltaic, battery and diesel technology	Cai, Wei Ningbo Univ Technol	ENERGY 6.082	https://www.sciencedirect.com/science/article/pii/S0360544220305879	211

22	Monolithic all-perovskite tandem solar cells with 24.8% efficiency exploiting comproportionation to suppress Sn(II) oxidation in precursor ink	Lin, Renxing Nanjing Univ	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0466-3	204
23	Cd-Free Cu(In,Ga)(Se,S)(2) Thin-Film Solar Cell With Record Efficiency of 23.35%	Nakamura, Motoshi Idemitsu Kosan Co Ltd	IEEE JOURNAL OF PHOTOVOLTAICS 3.052	https://ieeexplore.ieee.org/document/8825469	196
24	CO2 reduction on gas-diffusion electrodes and why catalytic performance must be assessed at commercially-relevant conditions	Burdyny, Thomas Delft Univ Technol	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c8ee03134g#!divAbstract	196
25	Long-life and deeply rechargeable aqueous Zn anodes enabled by a multifunctional brightener-inspired interphase	Zhao, Zhiming Chinese Acad Sci	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee00596j#!divAbstract	194
26	Challenges and Opportunities for Solar Evaporation	Chen, Chaoji Univ Maryland	JOULE 29.155	https://www.sciencedirect.com/science/article/pii/S2542435118306299	191
27	Building aqueous K-ion batteries for energy storage	Jiang, Liwei Chinese Acad Sci	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0388-0	184
28	2D Layered Double Hydroxides for Oxygen Evolution Reaction: From Fundamental Design to Application	Lv, Lin Huazhong Univ Sci & Technol	ADVANCED ENERGY MATERIALS 25.245	https://onlinelibrary.wiley.com/doi/full/10.1002/aenm.201803358	184
29	Managing grains and interfaces via ligand anchoring enables 22.3%-efficiency inverted perovskite solar cells	Zheng, Xiaopeng KAUST	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0538-4	180

30	An interface stabilized perovskite solar cell with high stabilized efficiency and low voltage loss	Yoo, Jason J. MIT	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee00751b#!divAbstract	177
31	Commercialization of Lithium Battery Technologies for Electric Vehicles	Zeng, Xiaoqiao Argonne Natl Lab	ADVANCED ENERGY MATERIALS 25.245	https://onlinelibrary.wiley.com/doi/full/10.1002/aenm.201900161	177
32	Solid-state polymer electrolytes with in-built fast interfacial transport for secondary lithium batteries	Zhao, Qing Cornell Univ	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0349-7	174
33	Biomass-derived porous carbon materials with different dimensions for supercapacitor electrodes: a review	Bi, Zhihong Chinese Acad Sci	JOURNAL OF MATERIALS CHEMISTRY A 11.301	https://pubs.rsc.org/en/content/articlelanding/2019/ta/c9ta04436a/unauth#!divAbstract	172
34	Data-driven prediction of battery cycle life before capacity degradation	Severson, Kristen A. MIT	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0356-8	171
35	Economics of converting renewable power to hydrogen	Glenk, Gunther Tech Univ Munich	NATURE ENERGY 46.495	https://www.gsb.stanford.edu/faculty-research/publications/economics-converting-renewable-power-hydrogen	161
36	Microbial fuel cells: An overview of current technology	Slate, Anthony J. Manchester Metropolitan Univ	RENEWABLE & SUSTAINABLE ENERGY REVIEWS 12.110	https://www.sciencedirect.com/science/article/pii/S1364032118306920	158
37	Enhancement of methane production in anaerobic digestion process: A review	Li, Yue Tongji Univ	APPLIED ENERGY 8.848	https://www.sciencedirect.com/science/article/pii/S0306261919302715	152

38	A Metal-Organic Framework Host for Highly Reversible Dendrite-free Zinc Metal Anodes	Wang, Zhuo Fudan Univ	JOULE 29.155	https://www.sciencedirect.com/science/article/pii/S2542435119300923	146
39	Recent advances in layered double hydroxide electrocatalysts for the oxygen evolution reaction	Cai, Zhengyang Univ Shanghai Sci & Technol	JOURNAL OF MATERIALS CHEMISTRY A 11.301	https://pubs.rsc.org/en/content/articlelanding/2019/TA/C8TA11273H#!divAbstract	146
40	The impact of energy alignment and interfacial recombination on the internal and external open-circuit voltage of perovskite solar cells	Stolterfoht, Martin Univ Potsdam	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee02020a#!divAbstract	143
41	Application of hydrides in hydrogen storage and compression: Achievements, outlook and perspectives	von Colbe, Jose Bellosta Helmholtz Zentrum Geesthacht	INTERNATIONAL JOURNAL OF HYDROGEN ENERGY 4.939	https://www.sciencedirect.com/science/article/pii/S0360319919302368	143
42	Magnesium based materials for hydrogen based energy storage: Past, present and future	Yartys, V. A. Inst Energy Technol	INTERNATIONAL JOURNAL OF HYDROGEN ENERGY 4.939	https://www.sciencedirect.com/science/article/pii/S0925838819347942	143
43	Current understanding and challenges of solar-driven hydrogen generation using polymeric photocatalysts	Wang, Yiou UCL	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-020-0651-4	138
44	High-energy lithium metal pouch cells with limited anode swelling and long stable cycles	Niu, Chaojiang Pacific Northwest Natl Lab	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0390-6	138

45	A review of lithium ion battery failure mechanisms and fire prevention strategies	Wang, Qingsong Univ Sci & Technol China	PROGRESS IN ENERGY AND COMBUSTION SCIENCE 28.938	https://www.sciencedirect.com/science/article/pii/S0360128518301801?via=ihub	138
46	Selective visible-light-driven photocatalytic CO ₂ reduction to CH ₄ mediated by atomically thin CuIn ₅ S ₈ layers	Li, Xiaodong Univ Sci & Technol China	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0431-1	137
47	Consensus statement for stability assessment and reporting for perovskite photovoltaics based on ISOS procedures	Khenkin, Mark V. Ben Gurion Univ Negev	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0529-5?proof=t	135
48	Trace doping of multiple elements enables stable battery cycling of LiCoO ₂ at 4.6V	Zhang, Jie-Nan Chinese Acad Sci	NATURE ENERGY 46.495	http://www.iphy.ac.cn/xwzx/kydt/201906/P020190624426073511729.pdf	134
49	Freestanding film made by necklace-like N-doped hollow carbon with hierarchical pores for high-performance potassium-ion storage	Yang, Wenxiu Peking Univ	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee00536f#!divAbstract	134
50	Intercalation-conversion hybrid cathodes enabling Li-S full-cell architectures with jointly superior gravimetric and volumetric energy densities	Xue, Weijiang MIT	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0351-0	132
51	Long cycle life and dendrite-free lithium morphology in anode-free lithium pouch cells enabled by a dual-salt liquid electrolyte	Weber, Rochelle Dalhousie Univ	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0428-9	130
52	Monolithic solid-electrolyte interphases formed in fluorinated orthoformate-based	Cao, Xia	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0464-5	125

	electrolytes minimize Li depletion and pulverization	Pacific Northwest Natl Lab			
53	Lithium-matrix composite anode protected by a solid electrolyte layer for stable lithium metal batteries	Shen, Xin Tsinghua Univ	JOURNAL OF ENERGY CHEMISTRY 7.216	https://www.sciencedirect.com/science/article/pii/S2095495618310696	124
54	High-performance fuel cell cathodes exclusively containing atomically dispersed iron active sites	Zhang, Hanguang SUNY Buffalo	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlepdf/2021/xx/C9EE00877B	123
55	High-energy long-cycling all-solid-state lithium metal batteries enabled by silver-carbon composite anodes	Lee, Yong-Gun Samsung Elect Co Ltd	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-020-0604-y	121
56	Wide-gap non-fullerene acceptor enabling high-performance organic photovoltaic cells for indoor applications	Cui, Yong Chinese Acad Sci	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0448-5	121
57	Impact of renewable energy consumption and financial development on CO2 emissions and economic growth in the MENA region: A panel vector autoregressive (PVAR) analysis	Charfeddine, Lanouar Qatar Univ	RENEWABLE ENERGY 6.274	https://www.sciencedirect.com/science/article/pii/S0960148119300102	119
58	Large-scale storage of hydrogen	Andersson, Joakim KTH Royal Inst Technol	INTERNATIONAL JOURNAL OF HYDROGEN ENERGY 4.939	https://www.sciencedirect.com/science/article/pii/S0360319919310195	119

59	Manipulating the ion-transfer kinetics and interface stability for high-performance zinc metal anodes	Xie, Xuesong Cent South Univ	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2020/ee/c9ee03545a#!divAbstract	118
60	A review of deep learning for renewable energy forecasting	Wang, Huaizhi Shenzhen Univ	ENERGY CONVERSION AND MANAGEMENT 8.208	https://www.sciencedirect.com/science/article/pii/S0196890419307812	118
61	Solar cell efficiency tables (version 56)	Green, Martin A. Univ New South Wales Sydney	PROGRESS IN PHOTOVOLTAICS 7.690	https://onlinelibrary.wiley.com/doi/10.1002/pip.3303	116
62	Critical Parameters for Evaluating Coin Cells and Pouch Cells of Rechargeable Li-Metal Batteries	Chen, Shuru Pacific Northwest Natl Lab	JOULE 29.155	https://www.sciencedirect.com/science/article/pii/S2542435119300534	114
63	High-nickel layered oxide cathodes for lithium-based automotive batteries	Manthiram, Arumugam Univ Texas Austin	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0513-0	113
64	Hydrogen production for energy: An overview	Dawood, Furat Murdoch Univ	INTERNATIONAL JOURNAL OF HYDROGEN ENERGY 4.939	https://www.sciencedirect.com/science/article/pii/S0360319919345926	112
65	How much does financial development contribute to renewable energy growth and upgrading of energy structure in China?	Ji, Qiang Shandong Normal Univ	ENERGY POLICY 5.042	https://www.sciencedirect.com/science/article/pii/S0301421518308516	112

66	Emerging applications of biochar-based materials for energy storage and conversion	Liu, Wu-Jun Univ Sci & Technol China	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/EE/C9EE00206E#!divAbstract	111
67	16.7%-efficiency ternary blended organic photovoltaic cells with PCBM as the acceptor additive to increase the open-circuit voltage and phase purity	Pan, Ming-Ao Inner Mongolia Normal Univ	JOURNAL OF MATERIALS CHEMISTRY A 11.301	https://pubs.rsc.org/en/content/articlelanding/2019/ta/c9ta06929a#!divAbstract	110
68	Recent progress in the synthesis of graphene and derived materials for next generation electrodes of high performance lithium ion batteries	Kumar, Rajesh Toyohashi Univ Technol	PROGRESS IN ENERGY AND COMBUSTION SCIENCE 28.938	https://www.sciencedirect.com/science/article/pii/S0360128519300619	110
69	Scientific Challenges for the Implementation of Zn-Ion Batteries	Blanc, Lauren E. Univ Waterloo	JOULE 29.155	https://www.sciencedirect.com/science/article/pii/S2542435120300945	108
70	Recent Progresses on Defect Passivation toward Efficient Perovskite Solar Cells	Gao, Feng Chinese Acad Sci	ADVANCED ENERGY MATERIALS 25.245	https://onlinelibrary.wiley.com/doi/10.1002/aenm.201902650	108
71	Poly(aryl piperidinium) membranes and ionomers for hydroxide exchange membrane fuel cells	Wang, Junhua Univ Delaware	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0372-8	107
72	Co-electrolysis of CO ₂ and glycerol as a pathway to carbon chemicals with improved technoconomics due to low electricity consumption	Verma, Sumit Univ Illinois	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0374-6	105

73	Fossil fuels, foreign direct investment, and economic growth have triggered CO2 emissions in emerging Asian economies: Some empirical evidence	Hanif, Imran NUR Int Univ	ENERGY 6.082	https://www.sciencedirect.com/science/article/pii/S0360544219300131	105
74	Redefining the Robeson upper bounds for CO2/CH4 and CO2/N-2 separations using a series of ultrapermeable benzotriptycene-based polymers of intrinsic microporosity	Comesana-Gandara, Bibiana Univ Edinburgh	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee01384a?utm_source=X-MOL&utm_campaign=xmol-highlight#!divAbstract	104
75	Benchmarking the performance of all-solid-state lithium batteries	Randau, Simon Justus Liebig Univ Giessen	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-020-0565-1	102
76	Patent landscape review on biodiesel production: Technology updates	Mahlia, T. M. I. Univ Technol Sydney	RENEWABLE & SUSTAINABLE ENERGY REVIEWS 12.110	https://www.sciencedirect.com/science/article/pii/S1364032119307348	102
77	Transition Metal Oxide Anodes for Electrochemical Energy Storage in Lithium- and Sodium-Ion Batteries	Fang, Shan HIU	ADVANCED ENERGY MATERIALS 25.245	https://onlinelibrary.wiley.com/doi/10.1002/aenm.201902485	100
78	Flow regime aspects in determining environmental flows and maximising energy production at run-of-river hydropower plants	Kuriqi, Alban Univ Lisbon	APPLIED ENERGY 8.848	https://www.sciencedirect.com/science/article/pii/S0306261919316678	98
79	A review on catalyst development for dry reforming of methane to syngas: Recent advances	Abdulrasheed, Abdulrahman Univ Teknol Malaysia	RENEWABLE & SUSTAINABLE	https://www.sciencedirect.com/science/article/pii/S1364032119301947	98

			ENERGY REVIEWS 12.110		
80	Insights into biochar and hydrochar production and applications: A review	Zhang, Zhikun Hebei Univ Technol	ENERGY 6.082	https://www.sciencedirect.com/science/article/pii/S0360544219300374	98
81	New Phase for Organic Solar Cell Research: Emergence of Y-Series Electron Acceptors and Their Perspectives	Li, Shuixing Zhejiang Univ	ACS ENERGY LETTERS 19.003	https://pubs.acs.org/doi/10.1021/acsenergylett.0c00537	96
82	Ligand-assisted cation-exchange engineering for high-efficiency colloidal Cs(1-x)FA(x)PbI(3) quantum dot solar cells with reduced phase segregation	Hao, Mengmeng Univ Queensland	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0535-7/	95
83	A review on feedstocks, production processes, and yield for different generations of biodiesel	Singh, Digambar Malaviya Natl Inst Technol	FUEL 5.578	https://www.sciencedirect.com/science/article/pii/S0016236119319076	93
84	Hydrogen storage and delivery: Review of the state of the art technologies and risk and reliability analysis	Moradi, Ramin Univ Maryland	INTERNATIONAL JOURNAL OF HYDROGEN ENERGY 4.939	https://www.sciencedirect.com/science/article/pii/S0360319919309656	93
85	Enabling High-Voltage Lithium-Metal Batteries under Practical Conditions	Ren, Xiaodi Pacific Northwest Natl Lab	JOULE 29.155	https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3346987	92
86	Predicting residential energy consumption using CNN-LSTM neural networks	Kim, Tae-Young Yonsei Univ	ENERGY 6.082	https://www.sciencedirect.com/science/article/pii/S0360544219311223	91

87	Fine-Tuning Energy Levels via Asymmetric End Groups Enables Polymer Solar Cells with Efficiencies over 17%	Luo, Zhenghui Hong Kong Univ Sci & Technol	JOULE 29.155	https://www.sciencedirect.com/science/article/abs/pii/S2542435120301380	90
88	Flexible electricity generation, grid exchange and storage for the transition to a 100% renewable energy system in Europe	Child, Michael Lappeenranta Univ Technol	RENEWABLE ENERGY 6.274	https://www.sciencedirect.com/science/article/pii/S0960148119302319	90
89	Minimising the present and future plastic waste, energy and environmental footprints related to COVID-19	Klemes, Jiri Jaromir Brno Univ Technol VUT Brno	RENEWABLE & SUSTAINABLE ENERGY REVIEWS 12.110	https://www.sciencedirect.com/science/article/pii/S1364032120301763	89
90	Improving cyclability of Li metal batteries at elevated temperatures and its origin revealed by cryo-electron microscopy	Wang, Jiangyan Stanford Univ	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0413-3	89
91	Advanced Electrocatalysts for the Oxygen Reduction Reaction in Energy Conversion Technologies	Tian, Xinlong HUST	JOULE 29.155	https://www.sciencedirect.com/science/article/pii/S2542435119306294	87
92	An opposition-based sine cosine approach with local search for parameter estimation of photovoltaic models	Chen, Huiling Wenzhou Univ	ENERGY CONVERSION AND MANAGEMENT 8.208	https://www.sciencedirect.com/science/article/pii/S0196890419306120	85
93	Power-to-Gas: Electrolysis and methanation status review	Thema, M. Tech Univ Appl Sci OTH Regensburg	RENEWABLE & SUSTAINABLE ENERGY REVIEWS 12.110	https://www.sciencedirect.com/science/article/pii/S136403211930423X	85

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95	Nature of FeSe ₂ /N-C Anode for High Performance Potassium Ion Hybrid Capacitor	Ge, Junmin Hunan Univ	ADVANCED ENERGY MATERIALS 25.245	https://onlinelibrary.wiley.com/doi/full/10.1002/aenm.201903277	81
96	Recent Advances on Water-Splitting Electrocatalysis Mediated by Noble-Metal-Based Nanostructured Materials	Li, Yingjie Peking Univ	ADVANCED ENERGY MATERIALS 25.245	https://onlinelibrary.wiley.com/doi/10.1002/aenm.201903120	80
97	Covalent-Organic Frameworks: Advanced Organic Electrode Materials for Rechargeable Batteries	Sun, Tao Nanyang Technol Univ	ADVANCED ENERGY MATERIALS 25.245	https://onlinelibrary.wiley.com/doi/pdf/10.1002/aenm.201904199	79
98	Over 14.5% efficiency and 71.6% fill factor of ternary organic solar cells with 300 nm thick active layers	Gao, Jinhua Beijing Jiaotong Univ	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2020/ee/c9ee04020j#!divAbstract	79
99	A review on mercury in coal combustion process: Content and occurrence forms in coal, transformation, sampling methods, emission and control technologies	Zhao, Shilin Southeast Univ	PROGRESS IN ENERGY AND COMBUSTION SCIENCE 28.938	https://www.sciencedirect.com/science/article/pii/S0360128518301308	79

100	All-temperature batteries enabled by fluorinated electrolytes with non-polar solvents	Fan, Xiulin Univ Maryland	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0474-3	77
101	Institutional quality, green innovation and energy efficiency	Sun, Huaping Jiangsu Univ	ENERGY POLICY 5.042	https://www.sciencedirect.com/science/article/pii/S0301421519305890	76
102	Biodiesel synthesis from Ceiba pentandra oil by microwave irradiation-assisted transesterification: ELM modeling and optimization	Silitonga, A. S. Politekn Negeri Medan	RENEWABLE ENERGY 6.274	https://www.sciencedirect.com/science/article/pii/S0960148119310857	75
103	Intramolecular electronic coupling in porous iron cobalt (oxy)phosphide nanoboxes enhances the electrocatalytic activity for oxygen evolution	Zhang, Huabin Nanyang Technol Univ	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2019/ee/c9ee02787d#!divAbstract	75
104	Ultrahigh discharge efficiency and improved energy density in rationally designed bilayer polyetherimide-BaTiO ₃ /P(VDF-HFP) composites	Sun, Liang Ocean Univ China	JOURNAL OF MATERIALS CHEMISTRY A 11.301	https://pubs.rsc.org/en/content/articlelanding/2020/ta/d0ta00903b#!divAbstract	74
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108	Catalytic reforming of volatiles from co-pyrolysis of lignite blended with corn straw over three different structures of iron ores	Zhao, Hongyu Univ Sci & Technol Beijing	JOURNAL OF ANALYTICAL AND APPLIED PYROLYSIS 3.905	https://www.sciencedirect.com/science/article/pii/S0165237019306898	73
109	Recent advancements in PV cooling and efficiency enhancement integrating phase change materials based systems - A comprehensive review	Ali, Hafiz Muhammad King Fahd Univ Petr & Minerals	SOLAR ENERGY 4.608	https://www.sciencedirect.com/science/article/pii/S0038092X19311752	70
110	Immobilized polymeric sulfonated ionic liquid on core-shell structured Fe ₃ O ₄ /SiO ₂ composites: A magnetically recyclable catalyst for simultaneous transesterification and esterifications of low-cost oils to biodiesel	Xie, Wenlei Henan Univ Technol	RENEWABLE ENERGY 6.274	https://www.sciencedirect.com/science/article/pii/S0960148119311127	70
111	Linking economic growth and ecological footprint through human capital and biocapacity	Danish Guangdong Univ Foreign Studies	SUSTAINABLE CITIES AND SOCIETY 5.268	https://www.sciencedirect.com/science/article/pii/S2210670719300459	70
112	Mechanically Robust All-Polymer Solar Cells from Narrow Band Gap Acceptors with Hetero-Bridging Atoms	Fan, Qunping Chalmers Univ Technol	JOULE 29.155	https://www.sciencedirect.com/science/article/pii/S2542435120300441	69

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114	Electrolyte design for LiF-rich solid-electrolyte interfaces to enable high-performance micro-sized alloy anodes for batteries	Chen, Ji Univ Maryland	NATURE ENERGY 46.495	https://www.sciencedirect.com/science/article/pii/S1369702120301061	68
115	Distributed Multi-Energy Operation of Coupled Electricity, Heating, and Natural Gas Networks	Xu, Da Hunan Univ	IEEE TRANSACTIONS ON SUSTAINABLE ENERGY 7.440	https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8938786	67
116	Decoupling electrolytes towards stable and high-energy rechargeable aqueous zinc-manganese dioxide batteries	Zhong, Cheng Tianjin Univ	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-020-0584-y?utm_source=sn&utm_medium=referral&utm_content=Rmarketing	67
117	Continuous Carbon Dioxide Electroreduction to Concentrated Multi-carbon Products Using a Membrane Electrode Assembly	Gabardo, Christine M. Univ Toronto	JOULE 29.155	https://www.sciencedirect.com/science/article/pii/S2542435119303654	67
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119	Review of wearable thermoelectric energy harvesting: From body temperature to electronic systems	Nozariasbmarz, Amin North Carolina State Univ	APPLIED ENERGY 8.848	https://www.sciencedirect.com/science/article/pii/S0306261919317568	66

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121	Tuning the electron-deficient core of a non-fullerene acceptor to achieve over 17% efficiency in a single-junction organic solar cell	Zhu, Can Cent South Univ	ENERGY & ENVIRONMENTAL SCIENCE 30.289	https://pubs.rsc.org/en/content/articlelanding/2020/ee/d0ee00862a/unauth#!divAbstract	65
122	Catalytic thermochemical conversion of biomass for biofuel production: A comprehensive review	Ong, Hwai Chyuan Univ Malaya	RENEWABLE & SUSTAINABLE ENERGY REVIEWS 12.110	https://www.sciencedirect.com/science/article/pii/S1364032119304745	65
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125	CFD study of heat transfer and fluid flow in a parabolic trough solar receiver with internal annular porous structure and synthetic oil-Al ₂ O ₃ nanofluid	Bozorg, Mehdi Vahabzadeh Huaiyin Inst Technol	RENEWABLE ENERGY 6.274	https://www.sciencedirect.com/science/article/pii/S0960148119312297	63
126	How does energy consumption affect China's urbanization? New evidence from dynamic threshold panel models	Wu, Haitao Xinjiang Univ	ENERGY POLICY 5.042	https://www.sciencedirect.com/science/article/pii/S030142151830795X	60

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128	Lithium metal anodes: Present and future	Chu, Fulu Cent South Univ	JOURNAL OF ENERGY CHEMISTRY 7.216	https://www.sciencedirect.com/science/article/pii/S2095495620300012	58
129	Interface Engineering of Hierarchical Branched Mo-Doped Ni ₃ S ₂ /Ni ₂ P Hollow Heterostructure Nanorods for Efficient Overall Water Splitting	Luo, Xu Wuhan Univ Technol	ADVANCED ENERGY MATERIALS 25.245	https://onlinelibrary.wiley.com/doi/full/10.1002/aenm.201903891	55
130	Taxonomy research of artificial intelligence for deterministic solar power forecasting	Wang, Huaizhi Shenzhen Univ	ENERGY CONVERSION AND MANAGEMENT 8.208	https://www.sciencedirect.com/science/article/pii/S0196890420304477	54
131	A review and comparative evaluation of thermochemical water splitting cycles for hydrogen production	Safari, Farid Univ Ontario Inst Technol	ENERGY CONVERSION AND MANAGEMENT 8.208	https://www.sciencedirect.com/science/article/pii/S0196890419311884	53
132	Gradient Li-rich oxide cathode particles immunized against oxygen release by a molten salt treatment	Zhu, Zhi MIT	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-019-0508-x?utm_source=feedburner&utm_medium=feed	53

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134	Towards a green world: How do green technology innovations affect total-factor carbon productivity	Du, Kerui Xiamen Univ	ENERGY POLICY 5.042	https://www.sciencedirect.com/science/article/pii/S0301421519302824	52
135	Controlling Molecular Mass of Low-Band-Gap Polymer Acceptors for High-Performance All-Polymer Solar Cells	Wang, Wei Wuhan Univ	JOULE 29.155	https://www.sciencedirect.com/science/article/abs/pii/S2542435120301343	50
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142	Thermochemical conversion of sewage sludge: A critical review	Gao, Ningbo Xi An Jiao Tong Univ	PROGRESS IN ENERGY AND COMBUSTION SCIENCE 28.938	https://www.sciencedirect.com/science/article/pii/S0360128519301285	46
143	Molecular design for electrolyte solvents enabling energy-dense and long-cycling lithium metal batteries	Yu, Zhiao Stanford Univ	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-020-0634-5?utm_source=other&utm_medium=other&utm_content=null	46
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151	A cobalt-phosphorus nanoparticle decorated N-doped carbon nanosheet array for efficient and durable hydrogen evolution at alkaline pH	Li, Xinyi Univ Elect Sci & Technol China	SUSTAINABLE ENERGY & FUELS 5.503	https://pubs.rsc.org/en/content/articlelanding/2020/se/d0se00240b#!divAbstract	42
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156	Realizing high zinc reversibility in rechargeable batteries	Ma, Lin US Army	NATURE ENERGY 46.495	https://www.nature.com/articles/s41560-020-0674-x?utm_source=other&utm_medium=other&utm_content=null	37
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162	Morphology regulation of metal-organic framework-derived nanostructures for efficient oxygen evolution electrocatalysis	Li, Yuwen Zhejiang Sci Tech Univ	JOURNAL OF MATERIALS CHEMISTRY A 11.301	https://pubs.rsc.org/en/content/articlelanding/2020/ta/d0ta05866a#!divAbstract	30
163	Hydrated Eutectic Electrolytes with Ligand-Oriented Solvation Shells for Long-Cycling Zinc-Organic Batteries	Yang, Wuhai Chinese Acad Sci	JOULE 29.155	https://www.sciencedirect.com/science/article/abs/pii/S2542435120302361	30
164	Regulatory challenges and opportunities for collective renewable energy prosumers in the EU	Ines, Campos Lisbon Univ	ENERGY POLICY 5.042	https://www.sciencedirect.com/science/article/pii/S0301421519307943	30
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170	The energy and environmental footprints of COVID-19 fighting measures - PPE, disinfection, supply chains	Klemes, Jiri Jaromir Brno Univ Technol VUT Brno	ENERGY 6.082	https://www.sciencedirect.com/science/article/pii/S0360544220318090	22
171	The impact of economic globalization on renewable energy in the OECD countries	Gozgor, Giray Istanbul Medeniyet Univ	ENERGY POLICY 5.042	https://www.sciencedirect.com/science/article/pii/S030142152030121X	22
172	A review of studies using hydrocarbon adsorption material for reducing hydrocarbon emissions from cold start of gasoline engine	Han, Dandan Hunan Univ	RENEWABLE & SUSTAINABLE ENERGY REVIEWS	https://www.sciencedirect.com/science/article/pii/S1364032120303701	21

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175	An intuitive review of supercapacitors with recent progress and novel device applications	Raghavendra, Kummara Venkata Guru Pusan Natl Univ	JOURNAL OF ENERGY STORAGE 3.762	https://www.sciencedirect.com/science/article/pii/S2352152X20314894	21
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178	A Novel Multi-Agent DDQN-AD Method-Based Distributed Strategy for Automatic	Xi, Lei China Three Gorges Univ	IEEE TRANSACTIONS	https://ieeexplore.ieee.org/document/8928960	20

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184	Cost-benefit analysis to support decarbonization scenario for 2030: A case study in Italy	Sofia, Daniele Sense Sq Srl	ENERGY POLICY 5.042	https://www.sciencedirect.com/science/article/pii/S0301421519307256	18

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