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Latest and Hot Papers

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近期热点文章
Latest and Hot Papers

Origin and Hysteresis of Lithium Compositional Spatiodynamics within Battery Primary Particles
J. Lim, Y. Li, D. H. Alsem, H. So, S. C. Lee, P. Bai, D. A. Cogswell, X. Liu, N. Jin, Y.-S. Yu, N. J. Salmon, D. A. Shapiro, M. Z. Bazant, T. Tyliszczak, W. C. Chueh
Science 2016, *353*, 566.
采用原位 X 射线成像技术研究锂嵌入/脱出 Li_xFePO_4 过程,发现提高锂嵌入速度可抑制颗粒内部相分离和降低机械张力, 有利于提高材料的循环性能,但锂脱出过程则情况相反.

Importance and Challenges of Electrochemical *in Situ* Liquid Cell Electron Microscopy for Energy Conversion Research
N. Hodnik, G. Dehm, K. J. J. Mayrhofer
Acc. Chem. Res. DOI:10.1021/acs.accounts.6b00330
基于液体电化学池的原位电子显微研究的评述文章,引用了 93 篇参考文献.

Formation of CoS_2 Nanobubble Hollow Prisms for Highly Reversible Lithium Storage
L. Yu, J. F. Yang, X. W. Lou
Angew. Chem. Int. Ed. DOI:10.1002/anie.201606776
以 MOF 为前体合成空心 CoS_2 材料, 用作锂离子电池材料,具有较好的储锂容量和循环性能.

Electrochemical Allylic Oxidation of Olefins: Sustainable and Safe
S. R. Waldvogel, M. Selt
Angew. Chem. Int. Ed. DOI:10.1002/anie.201606727
烯丙基类化合物的高选择性电化学氧化,是一种灵活高效的 C—H 键活化电有机合成方法.

Enhanced Electrochemical Kinetics on Conductive Polar Mediators for Lithium-Sulfur Batteries
H.-J. Peng, G. Zhang, X. Chen, Z.-W. Zhang, W.-T. Xu, J.-Q. Huang, Q. Zhang
Angew. Chem. Int. Ed. DOI:10.1002/anie.201605676
在多孔石墨烯框架中生长 TiC,并将这种材料用于锂硫电池正极,对抑制中间产物流失和促进电极反应均有帮助,S 载量可达 3.5 $mg\cdot cm^{-2}$.

Highly Conductive Anion-Exchange Membranes from Microporous Tröger´s Base Polymers
Z. Yang, R. Guo, R. Malpass-Evans, M. Carta, N. B. McKeown, M. D. Guiver, L. Wu, T. Xu
Angew. Chem. Int. Ed. DOI:10.1002/anie.201605916
报道了一种高度刚性主链的微孔结构碱性聚合物电解质, 离子交换容量仅为 0.82 $mmol\cdot g^{-1}$ 时离子电导率可达 0.16 S/cm (80 ℃),且溶胀率较低.

Supramolecular Thermo-Electrochemical Cells: Enhanced Thermoelectric Performance by Host-Guest Complexation and Salt-Induced Crystallization
H. Zhou, T. Yamada, N. Kimizuka
J. Am. Chem. Soc. DOI:10.1021/jacs.6b04923
利用 α 环糊精/I_3^- 超分子在不同温度下结合度差异实现电化学热电转换, 室温下 Seebeck 系数高达 2.0 $mV\cdot K^{-1}$,zT 系数达 5×10^{-3}.

Iridium-Based Double Perovskites for Efficient Water Oxidation in Acid Media
O. Diaz-Morales, S. Raaijman, R. Kortlever, P. J. Kooyman, T. Wezendonk, J. Gascon, W. T. Fu, M. T. M. Koper
Nature Commun. DOI:10.1038/ncomms12363
一张含 Ir 的双钙钛矿化合物, 虽然 Ir 含量比 IrO_2 少 32 wt%,但氧析出反应(OER)催化活性是 IrO_2 的三倍,是目前已知的最高的性能报道.

Nanoscale Electrochemistry of sp^2 Carbon Materials: From Graphite and Graphene to Carbon Nanotubes
P. R. Unwin, A. G. Güell, G. Zhang
Acc. Chem. Res. DOI:10.1021/acs.accounts.6b00301
sp^2 碳材料(包括石墨、石墨烯和碳纳米管)电化学应用的评述文章,引用了 66 篇参考文献.

***In Situ* Coupling of Strung Co_4N and Intertwined N—C Fibers toward Free-Standing Bifunctional Cathode for Robust, Efficient, and Flexible Zn-Air Batteries**
F. Meng, H. Zhong, D. Bao, J. Yan, X. Zhang
J. Am. Chem. Soc. DOI:10.1021/jacs.6b05046
通过煅烧 MOF 和聚吡咯获得 Co-N-C 复合材料,用于锌空电池正极,对 OER 和氧还原反应(ORR)都有高的催化活性,可循环 408 周.

Identification of Surface Reactivity Descriptor for Transition Metal Oxides in Oxygen Evolution

Reaction
H. B. Tao, L. Fang, J. Chen, H. B. Yang, J. Gao, J. Miao, S. Chen, B. Liu
J. Am. Chem. Soc. DOI:10.1021/jacs.6b05398
发现过渡金属氧化物(TMO)的表面配位未饱和金属离子的密度可作为其表面反应性的描述符,并用于指导 TMO 类 OER 催化剂的设计.

Polymer-Based Organic Batteries
S. Muench, A. Wild, C. Friebe, B. Häupler, T. Janoschka, U. S. Schubert
Chem. Rev. DOI:10.1021/acs.chemrev.6b00070
关于有机聚合物电池的综述,引用了 411 篇参考文献.

A Biodegradable Polydopamine-Derived Electrode Material for High-Capacity and Long-Life Lithium-Ion and Sodium-Ion Batteries
T. Sun, Z.-J. Li, H.-G. Wang, D. Bao, F.-l. Meng, X.-B. Zhang
Angew. Chem. Int. Ed. DOI:10.1002/anie.201604519
发现部分氧化的聚多巴胺是锂离子和钠离子电池很好的电极材料, 储锂和储钠容量分别高达 1818 $mAh\cdot g^{-1}$ 和 500 $mAh\cdot g^{-1}$,循环 1024 周储钠容量保持 100%.

Amorphous Li_2O_2: Chemical Synthesis and Electrochemical Properties
Y. Zhang, Q. Cui, X. Zhang, W. C. McKee, Y. Xu, S. Ling, H. Li, G. Zhong, Y. Yang, Z. Peng
Angew. Chem. Int. Ed. DOI:10.1002/anie.201605228
通过四甲基铵超氧化物和 $LiClO_4$ 反应获得高纯度的无定形 Li_2O_2,与晶态 Li_2O_2 相比具有更高的氧化反应动力学性能.

Single Cobalt Atoms with Precise N-Coordination as Superior Oxygen Reduction Reaction Catalysts
P. Yin, T. Yao, Y. Wu, L. Zheng, Y. Lin, W. Liu, H. Ju, J. Zhu, X. Hong, Z. Deng, G. Zhou, S. Wei, Y. Li
*Angew. Chem. Int. Ed.*DOI:10.1002/anie.201604802
通过煅烧含 Co 和 Zn 的 MOF 获得 Co 单原子分散的氮杂碳材料,对碱性 ORR 具有优于 Pt/C 的催化活性,且 5000 周循环测试性能不变.

Pentlandite Rocks as Sustainable and Stable Efficient Electrocatalysts for Hydrogen Generation
B. Konkena, K. j. Puring, I. Sinev, S. Piontek, O. Khavryuchenko, J. P. Dürholt, R. Schmid, H. Tüysüz, M. Muhler, W. Schuhmann, U.-P. Apfel
Nature Commun. DOI:10.1038/ncomms12269
将一种天然的镍黄铁矿($Fe_{4.5}Ni_{4.5}S_8$)直接作为酸性体系氢析出反应(HER)的催化剂,10 mA/cm^2 的超电势为 280 mV,且具有较好的稳定性.

Designing High-Energy Lithium-Sulfur Batteries
Z. W. Seh, Y. Sun, Q. Zhang, Y. Cui
Chem. Soc. Rev. DOI:10.1039/C5CS00410A
锂硫电池的综述,引用了 228 篇参考文献.

Cation Intercalation in Manganese Oxide Nanosheets: Effects on Lithium and Sodium Storage
K. Lu, Z. Hu, Z. Xiang, J. Ma, B. Song, J. Zhang, H. Ma
Angew. Chem. Int. Ed. DOI:10.1002/anie.201605102
在 MnO_2 纳米片层间引入不同的阳离子调控层间距, 用作锂离子电池和钠离子电池的正极材料,发现电极容量不仅与层间距有关,还与嵌入离子和层间结构性阳离子之间的相互作用有关.

A Rhodium/Silicon Co-Electrocatalyst Design Concept to Surpass Platinum Hydrogen Evolution Activity at High Overpotentials
L. Zhu, H. Lin, Y. Li, F. Liao, Y. Lifshitz, M. Sheng, S.-T. Lee, M. Shao
Nature Commun. DOI:10.1038/ncomms12272
以 Rh/Si 纳米线为 HER 催化剂, 具有双功能的催化特征,Rh 与 H 相互作用强, 催化氢吸附过程;Si 与 H 相互作用弱,催化氢析出过程.

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