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Latest and Hot Papers

ZHUANG Lin

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近期热点文章 Latest and Hot Papers

Dendrite-Free Lithium Deposition via Self-Healing Electrostatic Shield Mechanism

F. Ding, W. Xu, G. L. Graff, J. Zhang, M. L. Sushko, X. Chen, Y. Shao, M. H. Engelhard, Z. Nie, J. Xiao, X. Liu, P. V. Sushko, J. Liu, J. G. Zhang
J. Am. Chem. Soc. DOI:10.1021/ja312241y
利用 Cs⁺ 或 Rb⁺ 在 Li 枝晶表面的富集抑制其进一步生长,最终得到平整化的 Li 沉积层.

Low-Potential Sodium Insertion in A NASICON-Type Structure through the Ti(III)/Ti(II) Redox Couple

P. Senguttuvan, G. Rouse, M. E. A. Dompablo, H. Vezin, J. M. Tarascon, M. R. Palacín
J. Am. Chem. Soc. DOI:10.1021/ja311044t
Na₃Ti₂(PO₄)₃ 粉末的合成及 Na⁺ 嵌入与脱出行为研究,检验了正负极均由 Na₃Ti₂(PO₄)₃ 构成的 Na 离子电池原型.

Nitrogen: Unraveling the Secret to Stable Carbon-Supported Pt-Alloy Electrocatalysts

S. Pylypenko, A. Borisevich, K. L. More, A. Corpuz, T. Holme, A. Dameron, T. Olson, H. Dinh, T. Gennett, R. O'Hayre
Energy Environ. Sci. DOI:10.1039/C3EE40189H
通过对电子能量损失谱进行主成分分析,发现含 N 的碳载体可增强与其负载的金属催化剂之间的相互作用,起到稳定金属纳米粒子的作用.

Nanomaterials for Energy Conversion and Storage

Q. Zhang, E. Uchaker, S. L. Candelaria, G. Cao
Chem. Soc. Rev. DOI:10.1039/C3CS00009E
与能量转化与储存相关的纳米结构材料的综述. 引用了 341 篇文献.

Synthesis of Perovskite-Based Porous La_{0.75}Sr_{0.25}MnO₃ Nanotubes as a Highly Efficient Electrocatalyst for Rechargeable Lithium-Oxygen Batteries

J. J. Xu, D. Xu, Z. L. Wang, H. G. Wang, L. L.

Zhang, X. B. Zhang

Angew. Chem. Int. Ed. DOI:10.1002/anie.201210057
以 La_{0.75}Sr_{0.25}MnO₃ 钙钛矿多孔纳米管为 Li-O₂ 电池 ORR 催化剂,充放电循环 124 周.

Pseudo-Single-Crystal Electrochemistry on Polycrystalline Electrodes: Visualizing Activity at Grains and Grain Boundaries on Platinum for the Fe²⁺/Fe³⁺ Redox Reaction

B. D. B. Aaronson, C. H. Chen, H. Li, M. T. M. Koper, S. C. S. Lai, P. R. Unwin
J. Am. Chem. Soc. DOI:10.1021/ja310632k
结合高分辨扫描电化学显微与电子背散射衍射方法,可描绘多晶 Pt 电极的表面晶界等微观形貌,获得空间分辨的催化活性.

New Class of Nonaqueous Electrolytes for Long-Life and Safe Lithium-Ion Batteries

Z. Chen, Y. Ren, A. N. Jansen, C. Lin, W. Weng, K. Amine
Nature Commun. 4 (2013) 1513.
锂离子电池新型非水电解质 Li₂B₁₂F_{12-x}H_x,表现出优于 LiPF₆ 的循环性能与安全性.

Capture and Electrochemical Conversion of CO₂ to Value-Added Carbon and Oxygen by Molten Salt Electrolysis

D. H. Wang
Energy Environ. Sci. DOI:10.1039/C3EE24132G
以含碱金属碳酸盐的熔盐吸收 CO₂, 并 500 °C 下将 CO₂ 在 Ni 阴极上还原为 C, 在 SnO₂ 阳极上发生氧析出反应.

White Light from A Single-Emitter Light-Emitting Electrochemical Cell

S. Tang, J. Pan, H. A. Buchholz, L. Edman
J. Am. Chem. Soc. 135 (2013) 3647.
可发白光的电化学发光器件 (light-emitting electrochemical cell),电极材料为三种共轭高分子的共聚物.

First-Principles Prediction of the Equilibrium Shape of Nanoparticles Under Realistic Electrochemical Conditions

N. Bonnet, N. Marzari

Phys. Rev. Lett. 110 (2013) 086104.

第一性原理计算预测电化学条件下的金属纳米粒子形貌,发现在氢区电势范围 Pt 纳米粒子会发生从八面体向六面体的转变,碱性条件下尤为显著.

Mechanistic Studies of the Oxygen Evolution Reaction Mediated by A Nickel-Borate Thin Film Electrocatalyst

D. K. Bediako, Y. Surendranath, D. G. Nocera

J. Am. Chem. Soc. 135 (2013) 3662.

硼化镍在碱性条件下催化氧析出反应的机理研究.

A Rechargeable Room-Temperature Sodium Superoxide (NaO₂) Battery

P. Hartmann, C. L. Bender, M. Vračar, A. K. Dürr, A. Garsuch, J. Janek, P. Adelhelm

Nature Mater. 134 (2012) 20117.

可循环充放的 Na-O₂ 电池,以 0.2 mA·cm⁻² 充放电时氧电极超电势仅 200 mV. 在不使用催化剂的碳阴极表面, O₂ 发生 1 电子还原生成 NaO₂.

An Iron Complex with Pendent Amines as A Molecular Electrocatalyst for Oxidation of Hydrogen

T. Liu, D. L. DuBois, R. M. Bullock

Nature Chem. 5 (2013) 228.

氢氧化反应 Fe 分子催化剂的理性设计,其结构特征是配体上带有氨基,充当质子转移中继站.

Controlled Electrochemical Charge Injection to Maximize the Energy Density of Supercapacitors

Z. Weng, F. Li, D. W. Wang, L. Wen, H. M. Cheng

Angew. Chem. Int. Ed. DOI:10.1002/anie.201209259

一种提高对称型碳超级电容器容量的有效策略,通过调节碳表面的化学性质降低放电态碳电极的平衡电势,使正极有更大的电势提升空间,充电时器件电压可以达到 4.3 V,容量提升 10 倍.

A New Class of Solvent-in-Salt Electrolyte for High-Energy Rechargeable Metallic Lithium Batteries

L. Suo, Y. S. Hu, H. Li, M. Armand, L. Chen

Nature Commun. 4 (2013) 1481.

高浓度 Li 盐与少量溶剂形成的新型电解质体系,可抑制金属 Li 负极充电时的枝晶生长和 S 正极放电时多硫阴离子的流失.

Aromatic Porous-Honeycomb Electrodes for A Sodium-Organic Energy Storage Device

K. Sakaushi, E. Hosono, G. Nickerl, T. Gemming, H. Zhou, S. Kaskel, J. Eckert

Nature Commun. 4 (2013) 1485.

用于钠离子电池的新型正极材料:多孔结构的芳香有机物,7000 次充放循环容量保持 80%.

Cation Triggered Alkaline Degradation of PSF AEMs

C. G. Arges, V. Ramani

Proc. Natl. Acad. Sci. USA 110 (2013) 2490.

采用 2D NMR 研究聚砜型碱性聚合物电解质的主链稳定性,阐释阳离子官能团改变主链化学性质的机理.

Understanding and Controlling Nanoporosity Formation for Improving the Stability of Bimetallic Fuel Cell Catalysts

L. Gan, M. Heggen, R. O'Malley, B. Theobald, P. Strasser

Nano Lett. DOI:10.1021/nl304488q

燃料电池 PtNi 双金属催化剂的纳米多孔结构的形成机制与调控:当粒径大于 10 nm 时 Ni 会大量溶出使催化剂失去核壳结构、催化活性显著下降.

Interfacing Electrochemistry

N. M. Markovic

Nature Mater. 12 (2013) 101.

Markovic 关于电催化现状与未来的观点文章.

Enhancing Electrocatalytic Oxygen Reduction on MnO₂ with Vacancies

F. Cheng, T. Zhang, Y. Zhang, J. Du, X. Han, J. Chen

Angew. Chem. Int. Ed. 52 (2013) 2474.

计算与实验结合,通过调控 MnO₂ 表面的氧空穴浓度提升其 ORR 催化性能.

庄 林

(武汉大学 化学与分子科学学院)

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