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Latest and Hot Papers

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近期热点文章
Latest and Hot Papers

Graphene, Related Two-Dimensional Crystals, and Hybrid Systems for Energy Conversion and Storage

F. Bonaccorso, L. Colombo, G. Yu, M. Stoller, V. Tozzini, A. C. Ferrari, R. S. Ruoff, V. Pellegrini

Science DOI: 10.1126/science.1246501

关于石墨烯用于能量转化与储存的综述. 引用了 138 篇参考文献.

Enhancing Electrochemical Water-Splitting Kinetics by Polarization-Driven Formation of Near-Surface Iron(0): An *in Situ* XPS Study on Perovskite-Type Electrodes

A. K. Opitz, A. Nenning, C. Rameshan, R. Rameshan, R. Blume, M. Hävecker, A. Knop-Gericke, G. Rupprechter, J. Fleig, B. Klötzer

Angew. Chem. Int. Ed. DOI: 10.1002/anie.201409527

采用近常压 X 射线光电子能谱(NAP-XPS)研究高温水电解阴极材料 $La_{0.6}Sr_{0.4}FeO_{3-\delta}$(LSF), 发现电催化性能的显著上升与 Fe(0)的出现有关.

Two-Dimensional Metal-Organic Surfaces for Efficient Hydrogen Evolution from Water

A. J. Clough, J. W. Yoo, M. H. Mecklenburg, S. C. Marinescu

J. Am. Chem. Soc. DOI: 10.1021/ja5116937

通过 Co—S 键在电极表面形成高载量的二维金属-有机化合物, 对强酸性水溶液中的氢析出反应(HER)具有高的催化活性和稳定性.

A Highly Active Nanostructured Metallic Oxide Cathode for Aprotic Li-O_2 Batteries

L. Nazar, D. Kundu, R. Black, E. Jamstorp

Energy Environ. Sci. DOI: 10.1039/C4EE02587C

使用 Magnéli 相 Ti_4O_7 作为 Li-O_2 电池的正极材料, 充电时在 3 V 以上便开始催化 Li_2O_2 氧化. XPS 表征发现电极表面形成导电的保护层.

Evidence from *in Situ* X-ray Absorption Spectroscopy for the Involvement of Terminal Disulfide in the Reduction of Protons by an Amorphous Molybdenum Sulfide Electrocatalyst

B. Lassalle-Kaiser, D. Merki, H. Vrubel, S. Gul, V. K. Yachandra, X. Hu, J. Yano

J. Am. Chem. Soc. DOI: 10.1021/ja510328m

采用原位 X 射线吸收光谱(XAS)研究 HER 催化剂 MoS_2, 发现氢析出的过程与表面二硫单元的生成密切相关.

Are Room-Temperature Ionic Liquids Dilute Electrolytes?

A. A. Lee, D. Vella, S. Perkin, A. Goriely

J. Phys. Chem. Lett. DOI: 10.1021/jz502250z

提出一种包含离子和偶极相互作用的离子配对(Ion Pairing)模型, 计算表明离子液体中约 2/3 的离子是自由的, 因此离子液体是浓的电解质.

Self-Templated Formation of Uniform $NiCo_2O_4$ Hollow Spheres with Complex Interior Structures for Lithium-Ion Batteries and Supercapacitors

L. Shen, L. Yu, X.-Y. Yu, X. Zhang, X. W. Lou

Angew. Chem. Int. Ed. DOI: 10.1002/anie.201409776

无须附加的模版剂合成 $NiCo_2O_4$ 的复合空心球材料, 在锂离子电池和电容器应用中表现出优良的性能.

Phosphorus-Doped Graphitic Carbon Nitrides Grown *in Situ* on Carbon-Fiber Paper: Flexible and Reversible Oxygen Electrodes

T. Y. Ma, J. Ran, S. Dai, M. Jaroniec, S. Z. Qiao

Angew. Chem. Int. Ed. DOI: 10.1002/anie.201411125

在碳布上直接生长磷掺杂的石墨化氮化碳(P-g-C_3N_4), 对碱性介质中的氧还原反应(ORR)与氧析出反应(OER)具有高的催化活性.

Detection of the Short-Lived Cation Radical Intermediate in the Electrochemical Oxidation of N, N-Dimethylaniline by Scanning Electrochemical Microscopy

F. Cao, J. Kim, A. J. Bard

J. Am. Chem. Soc. DOI: 10.1021/ja511602v

采用扫描电化学显微(SECM)方法研究 N,N-二甲基苯胺(DMA)电氧化聚合过程中产生的碳自由基中间体.

How Much N-Doping Can Graphene Sustain?

Z. Shi, A. Kutana, B. I. Yakobson
J. Phys. Chem. Lett. 6 (2015) 106.
采用密度泛函理论(DFT)计算研究石墨化氮化碳($C_{1-x}N_x$)的热稳定性和电子性质,发现 x>3/8 时这种材料的结构无法保持稳定.

Compact Coupled Graphene and Porous Polyaryltriazine-Derived Frameworks as High Performance Cathodes for Lithium-Ion Batteries
Y. Su, Y. Liu, P. Liu, D. Wu, X. Zhuang, F. Zhang, X. Feng
Angew. Chem. Int. Ed. DOI: 10.1002/anie.201410154
一种石墨烯与聚芳基三嗪复合的锂离子电池阴极有机储锂材料,具有高的容量(395 mAh·g^{-1})和循环性能(5100 周).

Spinel Compounds as Multivalent Battery Cathodes: A Systematic Evaluation Based on Ab Initio Calculations
M. Liu, Z. Rong, R. Malik, P. Canepa, A. Jain, G. Ceder, K. Persson
Energy Environ. Sci. DOI: 10.1039/C4EE03389B
采用第一性原理计算系统地评估了可能作为多价离子嵌入阴极材料的尖晶石化合物, 包括嵌入平台、容量以及放电态和充电态的热力学稳定性.

Electrochemical Control of Single-Molecule Conductance by Fermi-Level Tuning and Conjugation Switching
M. Baghernejad, X. Zhao, K. B. Ørnsø, M. Füeg, P. Moreno-García, A. V. Rudnev, V. Kaliginedi, S. Vesztergom, C. Huang, W. Hong, P. Broekmann, T. Wandlowski, K. S. Thygesen, M. R. Bryce
J. Am. Chem. Soc. 136 (2014) 17922.
电化学氧化还原调控两金属电极间的单分子电导. 所研究的两种有机分子均含萘醌中心,电导变化可超过一个数量级.

Ionic Liquids as Precursors for Efficient Mesoporous Iron-Nitrogen-Doped Oxygen Reduction Electrocatalyst
Z. Li, G. Li, L. Jiang, J. Li, G. Sun, C. Xia, F. Li
Angew. Chem. Int. Ed. DOI: 10.1002/anie.201409579
采用含二茂铁的离子液体作为前体制备 Fe-N-C 催化剂,具有氮杂碳包裹氧化铁的介孔结构,对碱性介质 ORR 具有高的催化活性和稳定性.

A Hierarchical Tin/Carbon Composite as an Anode for Lithium-Ion Batteries with a Long Cycle Life
X. Huang, S. Cui, J. Chang, P. B. Hallac, C. R. Fell, Y. Luo, B. Metz, J. Jiang, P. T. Hurley, J. Chen
Angew. Chem. Int. Ed. DOI: 10.1002/anie.201409530
合成了具有多级结构的 Sn-C 复合材料,用于锂离子电池阴极, 容量为 537 mAh·g^{-1},3 A·g^{-1} 循环 1000 周无明显衰减.

Proton Transport Through One-Atom-Thick Crystals
S. Hu, M. Lozada-Hidalgo, F. C. Wang, A. Mishchenko, F. Schedin, R. R. Nair, E. W.Hill, D. W. Boukhvalov, M. I. Katsnelson, R. A. W. Dryfe, I. V. Grigorieva1, H. A. Wu, A. K. Geim
Nature 516 (2014) 7530.
发现质子可穿透单原子层的石墨烯和六边形氮化硼(hBN),传导阻抗为 10 Ω·cm^2. 这种质子传导还可以通过单层表面修饰催化性的金属纳米粒子得到进一步的增强.

Using Surface Segregation To Design Stable Ru-Ir Oxides for the Oxygen Evolution Reaction in Acidic Environments
N. Danilovic, R. Subbaraman, K. C. Chang, S. H. Chang, Y. Kang, J. Snyder, A. P. Paulikas, D. Strmcnik, Y. T. Kim, D. Myers, V. R. Stamenkovic, N. M. Markovic
Angew. Chem. Int. Ed. DOI: 10.1002/anie.201406455
催化剂的活性和稳定性往往难以兼顾. 本文通过热处理调控 RuIr 合金的表面偏析结构,使其对 OER 催化活性提高了 4 倍,但稳定性保持不变.

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