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Hailiang Wang, Li-Feng Cui, Yan Yang, Herman Sanchez Caslangue, Joshua Tucker Robinson, Yongye Liang, Yi Cui, and Honglai Dai

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We developed two-step solution-phase reactions to form hybrid materials of Mn₂O₃ nanoparticles on reduced graphene oxide (RGO) sheets for lithium ion battery applications. Selective growth of Mn₂O₃ nanoparticles on RGO sheets, in contrast to free particle growth in solution, allowed for the electrically insulating Mn₂O₃ nanoparticles to be wired up to a current collector through the underlying conducting graphene network. The Mn₂O₃ nanoparticles formed on RGO show a high specific capacity up to ~900 mAh/g, near their theoretical capacity, with good rate capability and cycling stability, owing to the intimate interactions between the graphene substrates and the Mn₂O₃ nanoparticles grown atop. The Mn₂O₃/RGO hybrid could be a promising candidate material for a high-capacity, low-cost, and environmentally friendly anode for lithium ion batteries. Our growth-on-graphene approach should offer a new technique for the design and synthesis of battery electrodes based on highly insulating materials.

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Yan-Li, Jiaqin Wang, Jun-Cheng, Zhi-Zhu, Xue-Zhang, Yang-Wang, Xue-Zhang and Bai Yang

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Thomas J. Heffernan, Jun Shi, Shengli Shi, and Phil S. Baran

Department of Chemistry, The Scripps Research Institute, 10558 North Torrey Pines Road, La Jolla, California 92037

J. Am. Chem. Soc., 2009, 131 (47), pp 17086-17087

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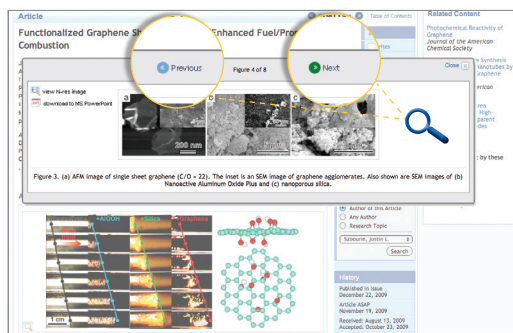
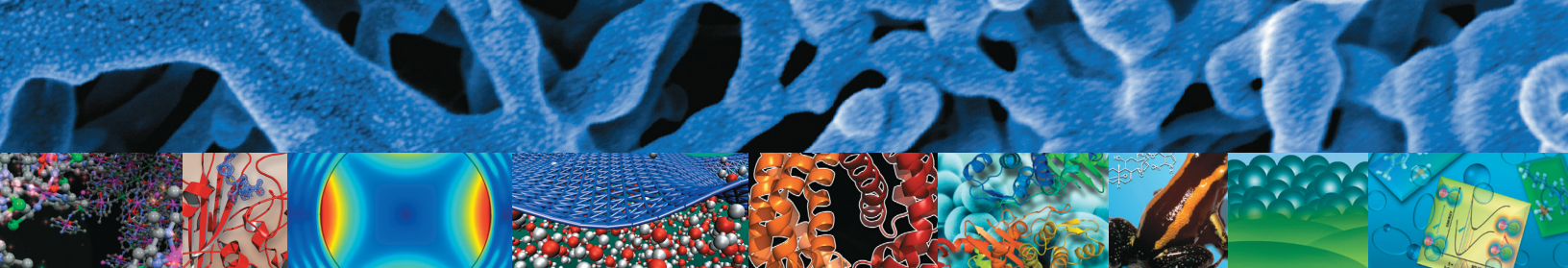
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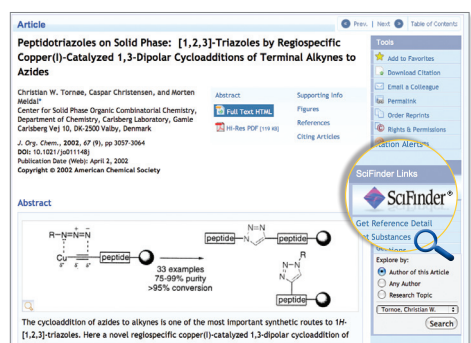
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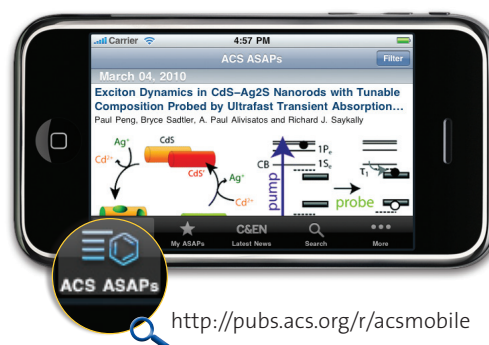
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