Facile Synthesis of MnO₂ Nanoparticles Well-dispersed on Graphene for the Enhanced Electrochemical Performance

Yanhong Zhao^{1,2}, Gang Chen^{1,*}, DaWang², Chunlai Song², Liping Xie², Liang Chang², Rui Wang¹, Nailiang Zhong²,

¹ Department of Chemistry, Harbin Institute of Technology, Harbin 150001, China.

² College of Environmental and Chemical Engineering, Heilongjiang University of Science and Technology, Harbin 150022, China

*E-mail: gchen@hit.edu.cn

doi: 10.20964/110402525

Received: 17 September 2015 / Accepted: 19 October 2015 / Published: 1 March 2016

Graphene/MnO₂ (GN/MnO₂) composites have been facile synthesized *via* a liquid phase route. The results of the morphology reveal that MnO₂ nanoparticles about 20 nm are well-dispersed on the surface of the graphene nanosheets. The stable structure, through promoting the interfacial electron and lithium ion transport, improve the electrochemical performance of GN/MnO₂ with increasing 80% of the special capacity. The graphene in the composite accommodate volume change and increase electrical conductivity. Meanwhile the MnO₂ nanoparticles prevent the stacking of the graphene sheets, maintaining the stability of the GN/MnO₂ composites. So the stable characteristic structure by facile liquid phase route can be employed for other metal oxide composites of electrode or photocatalysis materials.

Keywords: graphene, MnO₂, lithium ion batteries

[FULL TEXT](#)

© 2016 The Authors. Published by ESG (www.electrochemsci.org). This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).