

A Green and Novel Self-assembly Process for Preparation of a 3D Graphene/Ag Nanoparticle Aerogel

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It's well known that material science is a stereoscopic world. 3D architectures provide versatile approaches to enhance the performance of products. On the other hand, graphene has been widely explored for applications in electronics, actuators, catalysis and bio- or energy related systems. Thus, graphene materials are significant to be fabricated or assembled into desired nano-architectures for tuning their electrical, mechanical, chemical or electrochemical properties. Here, a green and novel method has been developed to prepare 3D graphene architectures wrapping nanoparticles inside the network. The obtained graphene/Ag aerogels are electrically conductive, porous, and lightweight, accessible to different graphene-based multifunctional nanocomposites in the form of macroscopic hydrogels or aerogels. The potentialities of them for various applications (antibacterial, catalyst system, and supercapacitor) have been being investigated. Acknowledgements This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF), funded by the Ministry of Education, Science and Technology (2012009529).