

EW-P009

Hierarchically Structured, Functionalized Graphenes for a Highly Reversible Capacitive Charge Storage

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Heteroatom phosphorous-doped graphene aerogel (PGA) with high surface area is successfully synthesized via hydrothermal method for high power and energy supercapacitors, including the advantage of three dimensional internetwork and constitutive graphene skeletons. The morphology of PGA was investigated by the scanning electron microscope, transmission electron microscope. The chemical structure and circumstances were confirmed by Raman and X-ray photoelectron spectroscopy, the phosphorus is successfully incorporated with the graphene sheets. As evidenced by electrochemical measurements, cyclic voltammetry and galvanostatic charge discharge, the hierarchically PGA has an unprecedented high capacitance, which contributes to the excellent high-rate performance of this material for supercapacitor application.

Keywords: phosphorous-doped graphene aerogel, supercapacitor

EW-P010

Application of Novel BSF Metal and Laser Annealing to Silicon Heterojunction Solar Cell

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Generally, silicon heterojunction solar cell has intrinsic and n-type of hydrogenated amorphous silicon (a-Si:H) as passivation layer and BSF layer. In this study, antimony, novel material, deposited on back side of the heterojunction solar cell as passivation and BSF layer to substitute the a-Si:H and the characteristics of the solar cell such electrical properties and optical properties were analyzed. And SIMS analysis was carried out to obtain the depth profile of the BSF layer which was deposited by laser annealing process.

Keywords: BSF, silicon heterojunction solar cell, antimony