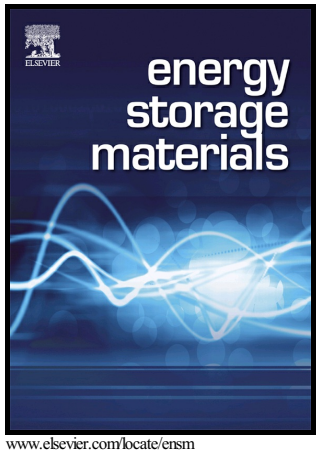

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Transition Metal-Free Graphene Framework Based on Disulfide Bridges as a Li Host Material

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Abstract

A graphene sulfide framework (GSF) is designed and synthesized *via* a hybridization of graphene and organic compounds for use in electrodes for high-performance Li-ion batteries (LIB). This electrode material is devoid of transition metal and features a layered framework structure that is constructed by the formation of covalent disulfide bonds between organic linker molecules and graphene sheets. This structure capitalizes on the advantageous properties of each of the components in an electrochemical reaction. The structures of GSFs are characterized by Cs-corrected transmission electron microscopy (Cs-TEM), field emission scanning electron microscopy (FE-SEM), and X-ray diffraction (XRD). Depending on current density, the GSF electrodes exhibit two different types of electrochemical behavior

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