

3D Black phosphorus / Reduced graphene oxide production and energy storage through a mixture of 2D Blackphosphorus and Graphene oxide

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Black phosphorus Among allotropes of Phosphorus, it is the most useful 2D material for energy storage system. It is most widely used as a anode material in lithium-ion batteries, but its use is limited due to a large volume expansion. In this work, graphene was added to minimize this volume change. Black phosphorus and graphene oxide were added in DI Water and the experiment was carried out through a facile mixing process. At the same time as the graphene oxide was reduced, the formation of P-C bond could be confirmed through XPS analysis. So, the cycle characteristics of black phosphorus were improved, and the capacity was also greatly increased. In this work, a facile 3D black phosphorus/reduced graphene oxide synthesis was performed, and the utilization of black phosphorus in energy storage devices can be expected to increase.