Enhancement of Li-O_2 Battery Performance with Novel Graphene-like-Carbon sphere-Based Oxygen Electrode

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In recent years, Li-O2 battery has emerged as one of promising next-generation energy storage systems with benefits of higher energy density and exceeding specific capacity. According to previous studies, it has been revealed that nanostructured material with large surface area and high porosity is compatible for oxygen electrode of Li-O2 battery by alleviating pore clogging. In this respect, various carbon configurations have been investigated extensively as an electrode material.
Herein, we introduce a novel graphene-like-carbon structure, carbon bubble, as an electrode material and evaluate the battery performance with this electrode without any additional catalysts. Due to unique structure and graphene like characteristic, such as high specific surface area and large pore volume, and high availability from cheap source, this novel carbon material can be widely used as outstanding electrode material for Li-O2 battery application. Specific discharge capacity increased over 3 times higher than that of commercial KB600J. Based on these study, it can be demonstrated that carbon bubble is a promising candidate for use as an ideal electrode in Li-O2 battery.