

## Modification of Ordered Mesoporous Carbon by Introducing Porosity and Loading Metal Nanoparticles

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Li-ion battery which is most commonly used has problems with low capacity, high price and possibility of explosion. Li-S battery is becoming a one of the promising alternatives. It has high theoretical energy density and low cost. Furthermore it is eco-friendly and safe. But polysulfide anions are dissolved in the repetitive charging and discharging so it makes the capacity decrease, shuttle effect.

To minimize the shuttle effect we modified ordered mesoporous carbon(OMC) materials. Carbon materials which have good conductivity are used with sulfur because the sulfur is non-conductive. Especially the OMC has thermal and chemical stability, high surface area and high pore volume. First, we synthesized the OMC materials with micropore by introducing silica nanoparticles. We expected that polysulfides with long chain could be blocked because of the small pore size. Also we loaded metal nanoparticles on the OMC. Nanoparticles of platinum could catalyze the reaction of polysulfides so dissolved polysulfides could be trapped.

The materials were characterized by X-ray diffraction(XRD), N<sub>2</sub>-sorption, scanning electron microscope(SEM), and energy dispersive X-ray(EDX).