Supporting information for

A novel solid-state Li-O_2 battery with an integrated electrolyte and cathode structure

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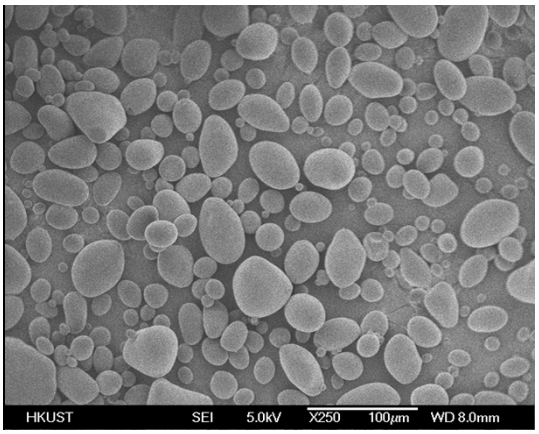

Fig. S1 SEM image to show the particle dimensions of starch served as pore former in the preparation of porous cathode-support. The big particles in SEM imgage should be aggregation.

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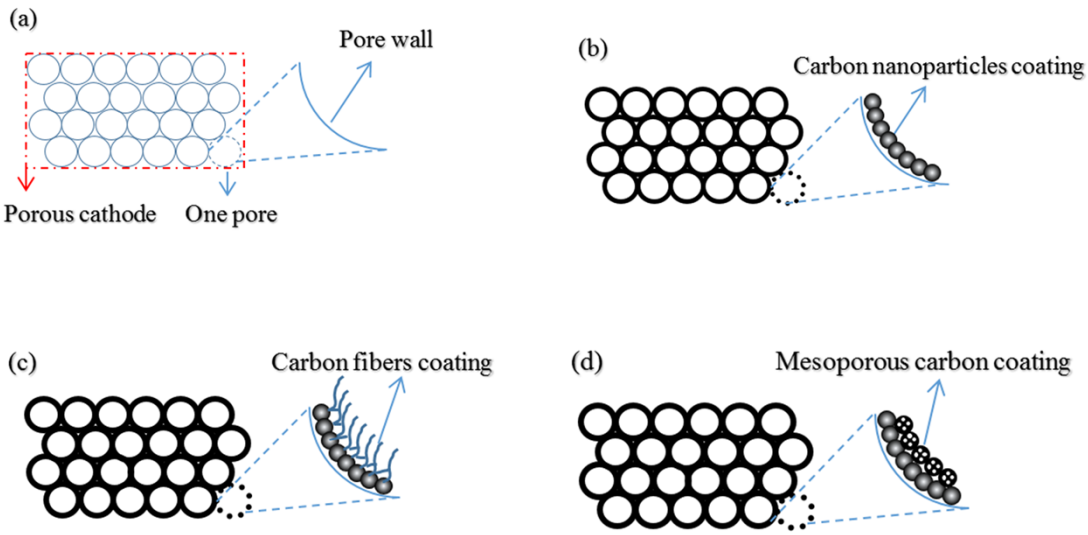

Fig. S2 Schematic illustration of (a) a blank LATP cathode-support with a high porosity of 78%, (b) a LATP cathode-support coated with monolayer carbon nanoparticles, (c) a LATP cathode-support coated with a bilayer carbon coating (the top layer is carbon fibers and the bottom layer is carbon nanoparticles the same as (b)) and (d) a LATP cathode-support coated with a bilayer carbon coating (the top layer is mesoporous carbon and the bottom layer is carbon nanoparticles the same as (b)).

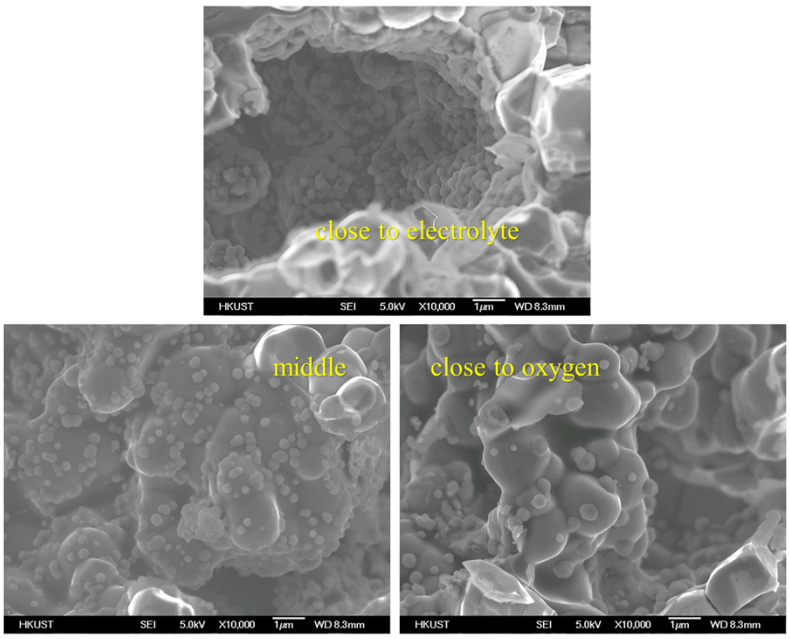

Fig. S3 SEM images of the carbon-nanoparticles coated cathode (carbon loading, 2 mg cm^{-2}) after discharging to 2.0 V at a constant current density of 2.5 mA cm^{-2} in pure oxygen. The comparison is used to demonstrte the gradient distribution of the discharge product.