

Synthesis of Mesoporous carbon spheres for the oxygen reduction reaction in acidic media

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To enable a large scale utilization of fuel cells for energy-related applications, efficient and low cost electrocatalysts are highly desired. In particular, the improvement of the electrocatalytic activity of the cathode reaction (oxygen reduction reaction, ORR) represents one of the important issues to be addressed. To this end, the electrocatalysts composed of Pt-based binary and ternary alloys have been developed to enhance the kinetics of the electrode reactions. Alternatively, the application of new nanostructured carbon materials as catalyst supports has been pursued. Such nanocarbons include carbon nanotubes, carbon nanofibers, macroporous carbons, graphitic carbon nanocoils, and ordered mesoporous carbons (OMCs). As a continuation of our previous studies, here, we have synthesized mesoporous carbon spheres (MCS) using the cheap available sources and water as solvent, followed by complete characterization of the spheres, which result in excellent electrocatalytic performance for ORR.