The Ag Micro-Particle Electrode for Li-O_2 Batteries

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Present Li-air batteries, however, have still many problems to be satisfactorily applied to electrical vehicles. One of them is the low round-trip efficiency. The cause of low round-trip efficiency is largely due to the formation of Li2CO3 during cycling of Li-air batteries because Li2CO3 decomposes at a potential higher than 4V. Li2CO3 is typically formed by decomposition of the carbon materials in the electrodes and the organic solvent. Li2CO3 formed by decomposition of carbon materials occupies half of whole Li2CO3 formed by decomposition of carbon in electrode and solvent in electrolyte. Therefore, to reduce the polarization in the oxygen evolution reaction (OER), it is required to develop a carbon-free electrode.
In this study, we employ Ag-coated air electrode prepared by electrodeposition. The electrodeposition is one of the simplest metal deposition methods and easily adaptable to a large scale production.