

X-ray micro CT and FIB-SEM based three-dimensional microstructure measurements of porous anodes for Li-ion battery

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We present a comparison of two methods of measurements in 3D-reconstruction of porous structures for Li-ion battery anodes. X-ray micro-CT with 700nm resolution and FIB-SEM with 150nm resolution tomography was carried out to capture the porous microstructure of Li-ion battery anodes. Two different anodes that consist of active material, binder and pore were produced in different manufacturing processes. The reconstructed structures through different methods were characterized by calculating pore structural properties. Also, electrolyte impregnation properties affecting performance of Li-ion battery were computed and compared for two structures. As a result, according to two measurement methods, the difference of microstructural property was observed, but the tendency of mass transport property was same. It means that the pores which have a radius less than 700nm have a less influence on mass transport property.