Isoelectric Points of Meso-Porosity Carbons Depending on Carbonization Temperatures and Surface Modification

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Ordered mesoporous carbons are commonly used in many fields such as adsorbent, catalysis, chromatography and gas separation. Pore size, pore structure, and specific surface area have been regarded as important characteristics of OMCs. Accompanying with the properties, surface characteristics is also important for the practical applications. However, study on the surface characteristics of OMC materials has been almost neglected so far. In the present work, ordered mesoporous carbon (OMC), CMK-8 analogues were successfully prepared by nano-casting technique at various carbonization temperatures and post acid treatment using HNO_3 and NaOH solution. Isoelectric points (IEP) of the OMC samples were changed by the carbonization temperatures and surface modification method. The decrease in carbonization temperature and post acid treatment resulted in the increase of surface functional groups and the consequent lowered IEP values. The results in the present report are expected to be useful for the practical application of OMC materials.