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Oxidized dahlia-like carbon nanohorns: adsorption of argon, methane and nitrogen[1] VAIVA KRUNGLEVICIUTE, ALDO MIGONE, Department of Physics, Southern Illinois University, MASAKO YUDASAKA, SUMIO IIJIMA, National Institute of Advanced Industrial Science and Technology — Different types of nanohorns, and nanohorn aggregates, can be produced depending on the parameters used during their production. We used a sample consisting mainly of dahlia-like nanohorn aggregates. In the dahlia-like aggregates the individual nanohorns are aligned radially, forming a sphere, with their individual ends protruding from the outer surface of the spherule. Our sample was oxidized by flowing pure oxygen. This treatment opened entry ports into the spaces at the interior of the individual nanohorns. We measured volumetric adsorption isotherms at 77.3 K with argon, methane, and nitrogen. For argon and methane two distinct substeps are present in the adsorption data; the steps for each of these two gases are comparable in size. For nitrogen there is a clear step present at lower adsorbent loadings, and a more gradual growth in the amount adsorbed as saturation is approached.

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