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Nanofabrication of carbon materials DINKO CHAKAROV, HANS FREDRIKSSON, BENGT KASEMO, Chalmers University of Technology, DEPARTMENT OF APPLIED PHYSICS TEAM — We demonstrate a process for fabrication of nanostructures on the surfaces of highly oriented pyrolytic graphite (HOPG) and glassy carbon (GC) samples. Using hole-mask colloidal lithography (HCL), nanosized etch masks with three different feature diameters were prepared by identical processes on each of the two surface types. Oxygen reactive ion etching (RIE) was then used to transfer the mask pattern onto the surfaces. The structures were characterized using atomic force- (AFM), scanning electron microscopy (SEM) and optical spectrophotometry. The identical preparation schemes applied to the two materials yield structures with remarkably different shape and sizes. For example the process that yields 361 nm high and 37 nm diameter structures on glassy carbon yields 120 nm high and 119 nm diameter structures on HOPG. In general, the diameters of the fabricated GC nano-features are always at least 80 nm smaller than those of the corresponding HOPG structures, and the GC structure heights are more than three times that of the HOPG structures. These differences are attributed to different (an)isotropic etching behavior of the two materials.

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