Polishing of CVD Diamond Films in Vacuum

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An efficient polishing process has been carried out at the polishing speed about 200 mm/s in vacuum with temperature of 850°C. With the polishing time reaches 120min, the surface roughness of polished could get to Ra0.016 compared to original Ra9.67. Mass loss rate per hour was used to quantify the polishing efficiency. Increasing the polishing pressure could get high mass loss rate, which could be used in the rough machining process. In fine machining process, the polishing pressure should be lower and the high polishing speed should be remained. The 3D morphology from atomic force microscope(AFM) shows there are some summits about 30-40nm in height, and the summits take into the shape of directional narrow cone.

Keywords: CVD diamond, Polishing, Vacuum

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