

### Effect of the flow rate and oxygen dilution in Diamond film synthesis

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We report an investigation on the adsorption of atomic O and coadsorption with H on a diamond C (110) surface. Diamond thin film was synthesized by Hot filament chemical vapor deposition method. Before evaporated, did diamond to do reconstruction by flashing method during pretreatment process. if see as LEED pattern, could know reconstructive and that lattice structure(1×1) of Si(100) is changed to (2×1). That more crystalline appears well than image to observed crystalline and rate of deposition of diamond created in connection with velocity of flow as changes this sample according to flux(100 ~ 300sccm), and remove carbon of amorphous diamond effectively if dilutes oxygen. Also, According to result that evaporates related to an oxygen gases (1, 2 or 3 vol.%), that crystalline improves as there are a lot of fluxes observe, and which diluted variety oxygen gases 1, 2 or 3 vol.%, showed crystal size related fluxs. So the more flux oxygen gases dilution, the more large crystal size. The deposition rate appeared when is 3% highest. The addition of O can play a positive role in the gas phase as well as the surface chemistry during growth. O may reduce the amount of sp<sup>3</sup> bonded species in the gas phase and increase the number of methyl radicals.