

Supplementary Materials: On the etching mechanism of highly-hydrogenated SiN films by CF₄/D₂ plasma: comparison with CF₄/H₂

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The Figure S1 shows the surface morphology of the samples (a) before etching, after etching with (b) the CF₄/D₂ and (c) CF₄/H₂ plasma at 20 °C. For the pristine SiN film, the root-mean-square surface roughness (R_{rms}) was obtained to be approximately 0.85 nm. Upon exposure of the CF₄/D₂ plasma, the amount of R_{rms} decreased to 0.28 nm; on the contrary, for the CF₄/H₂ plasma, the R_{rms} increased very slightly to 0.94 nm. The decrease of the R_{rms} for the CF₄/D₂ may be associated with a well-balance between the surface passivation from the FC layer deposition that alleviates plasma damage to the SiN substrate, and the remove of the deposited FC layer by reactive ion sputtering.

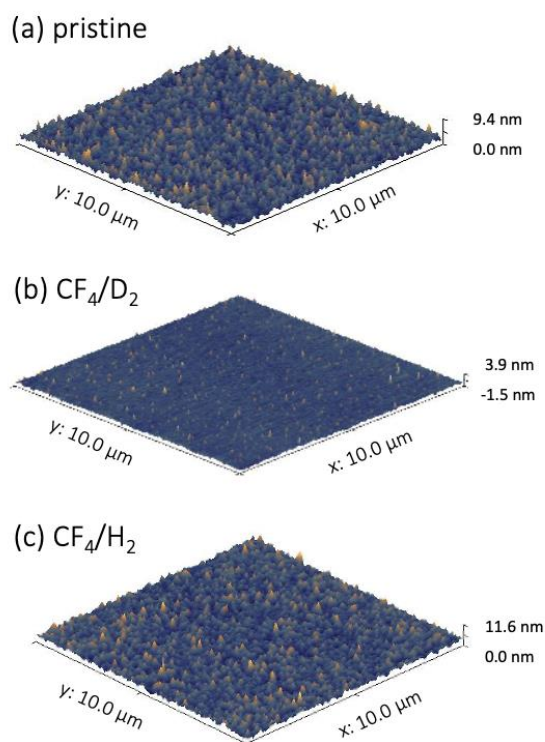


Figure S1. Surface roughness of the samples (a) before etching and after etching with the (b) CF₄/D₂ and (c) CF₄/H₂ plasma at substrate temperature of 20 °C.