

Supporting information

In order to confirm the presence of various etch products, mass spectroscopic analysis was carried out. In the case of O_2 plasma, there was no etch products observed at the end of 30th second. In the beginning of 3rd minute, CO and CO_2 molecular species were observed at 28 and 44 amu respectively. In the case of NH_3 plasma, peak corresponding to HCN species were observed, which an indication of CN^- evolution is. However, this peak was not resolved in the case of N_2 plasma treatment, since the peak could be merged with the peak corresponding to molecular N_2 (28 amu). However in the case of H_2 plasma, only the intensity of H_2O species showed pronounced increase in the beginning of 3rd minute compared to the spectra collected at the end of 30th second.

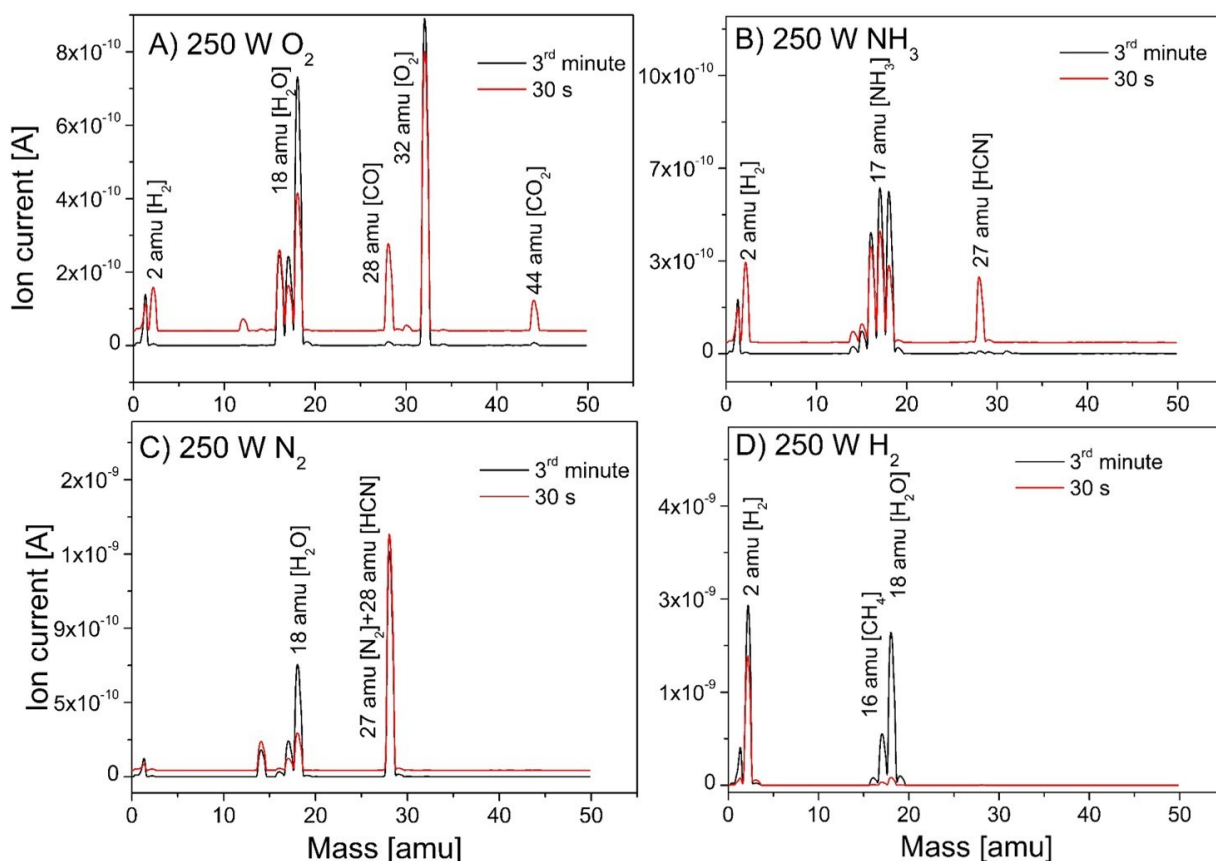


Figure SI 1. Mass spectra collected from different plasma treatments A) 250 W O_2 plasma, B) 250 W NH_3 plasma, C) 250 W N_2 plasma, D) 250 W H_2 plasma.

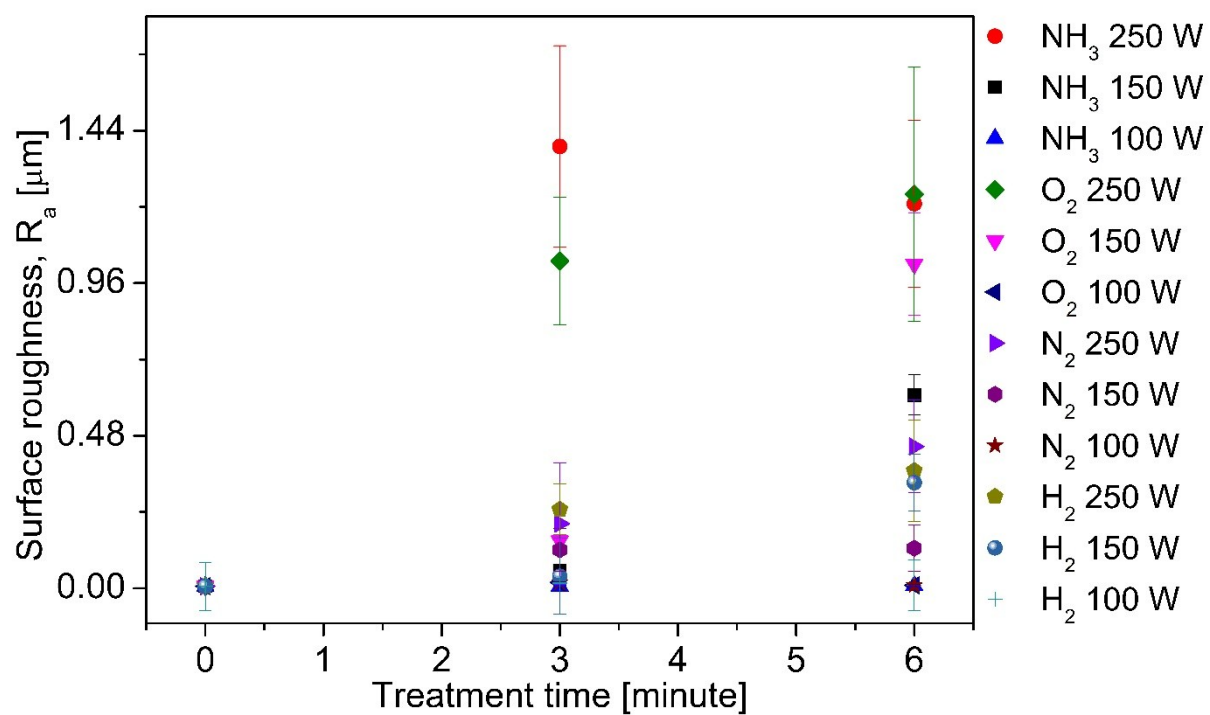


Figure SI 2. The variation of surface roughness as a function of plasma exposure time.