

Supplemental Information

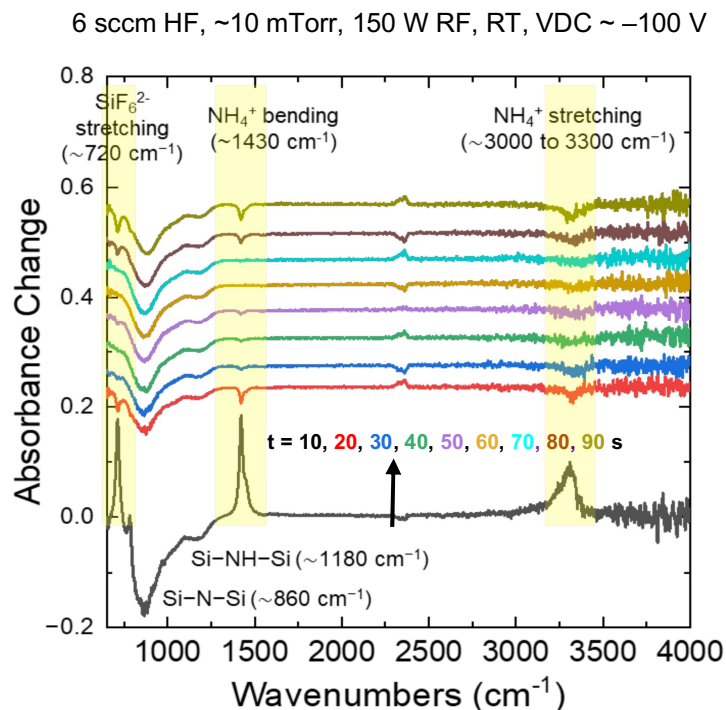
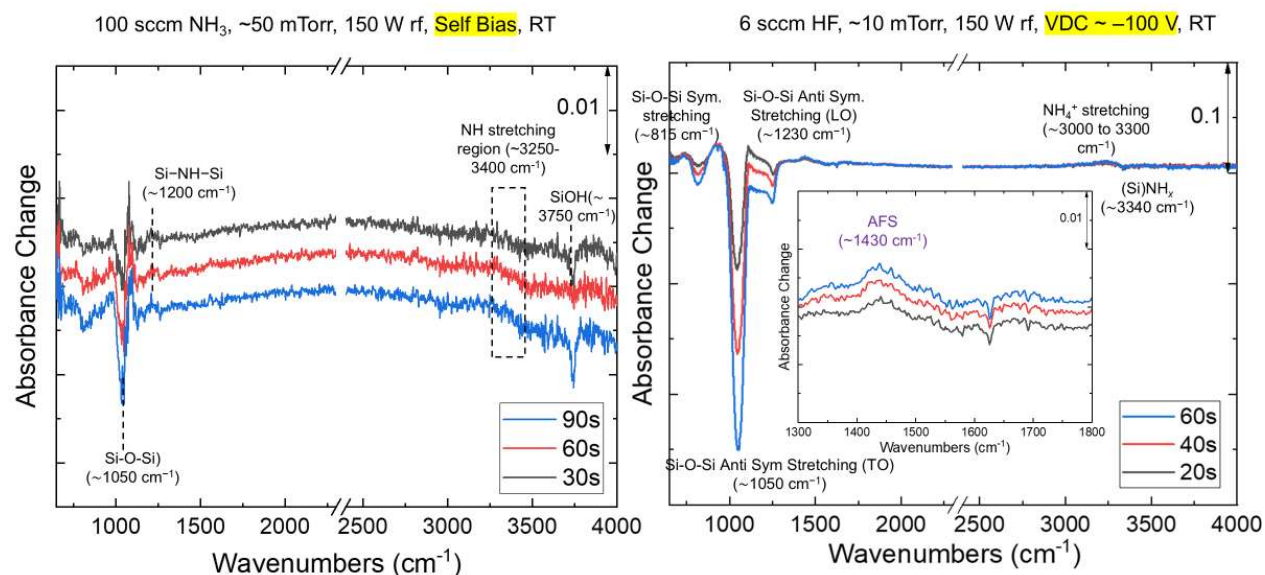


Figure 1: *In situ* infrared spectra recorded during the reactive ion etching of SiN_x with HF plasma. The first spectrum, taken before the experiment, serves as the initial background reference. For each subsequent spectrum (2nd, 3rd, ...), the previous spectrum is used as the background to highlight dynamic changes.



The reference spectrum corresponds to the film before NH_3 plasma The reference spectrum corresponds to the film after NH_3 plasma

Figure 2: (a) Infrared spectra recorded during surface nitridation of the plasma-deposited SiO_2 film with an NH_3 plasma, and (b) HF plasma etching of the nitrided SiO_2 surface.