

Supplemental material

Inhibition of SiO₂ by NH₃ plasma treatments for bottom-up gap-fill applications

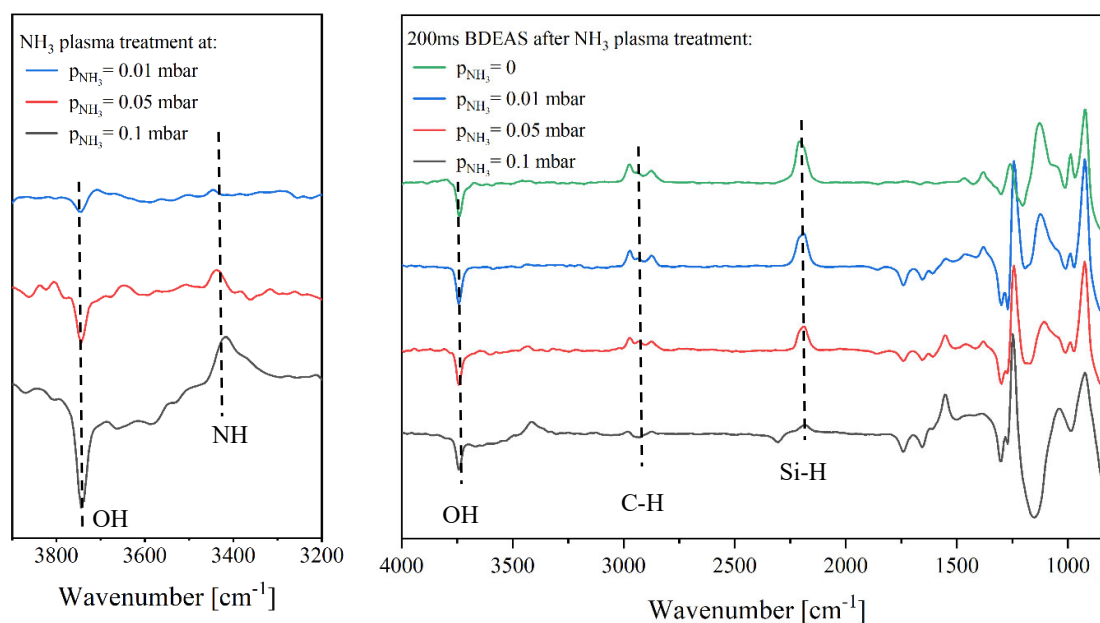


Figure S1. (a) In-situ RAIRS spectra of SiO₂ exposed to 60s NH₃ plasma at different NH₃ pressures. The dashed lines highlight the OH stretching mode at ~3743 cm⁻¹ and the NH_x (x=1, 2) stretching modes at 3500-3300 cm⁻¹.^[1] (b) In-situ RAIRS spectra acquired after a 200ms exposure of BDEAS on SiO₂ exposed to 60s NH₃ plasma at different pressures: 0 mbar (no plasma pretreatment), 0.01 mbar, 0.05 mbar and 0.1 mbar. The dashed lines highlight the OH stretching mode at ~3743 cm⁻¹ and the CH_x (x=1, 2, 3) 2975-2850 cm⁻¹ and Si-H stretching modes at ~2185 cm⁻¹ of the adsorbed BDEAS molecules.^[1]

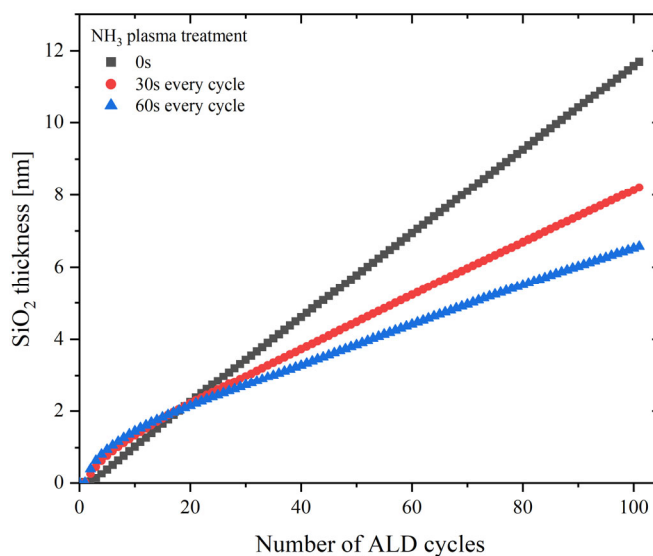


Figure S2. Growth of SiO₂ on SiO₂ (planar sample) with and without NH₃ plasma pre-treatment. The growth surface was exposed to 30s (red dots) and 60s (blue triangle) NH₃ plasma every cycle.

References

^[1] N. Leick *et al.*, *Plasma Processes and Polymers*, **16**, 1900032 (2019)