

Thermal Atomic Layer Etching of Palladium with Chlorination and Ligand Volatilization

Hojin Kang, Ahyeon Cho, Hee-Tae Jung, Sooyeon Cho and Heeyeop Chae

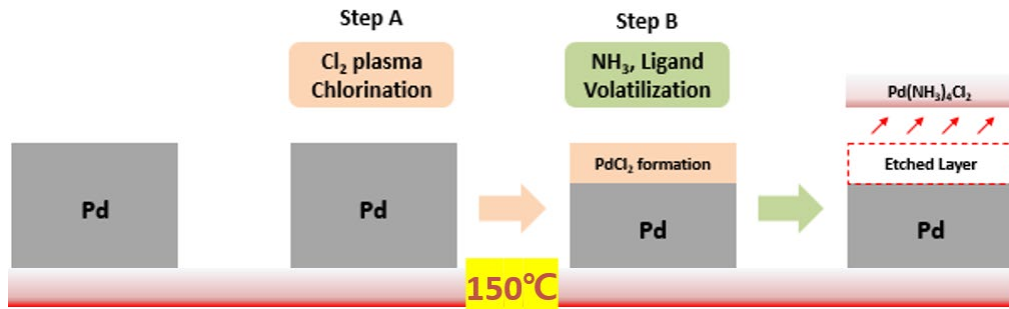


Figure 1. Sequence of the ALE process for Pd with surface chlorination and ligand volatilization.

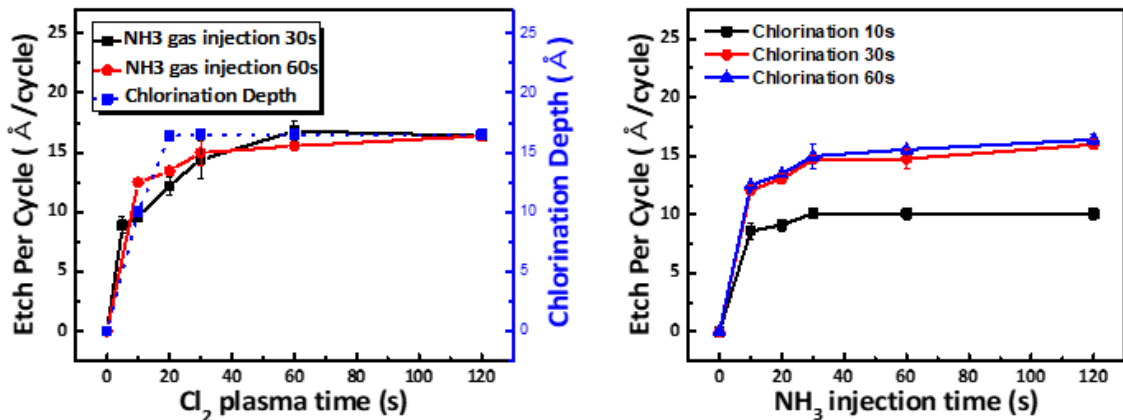


Figure 2. (a) Chlorination depth of Pd with Cl₂ plasma and etch per cycle of Pd with Cl₂ plasma times in the surface chlorination step. (b) Etch per cycle of Pd with NH₃ injection times in the ligand volatilization step.

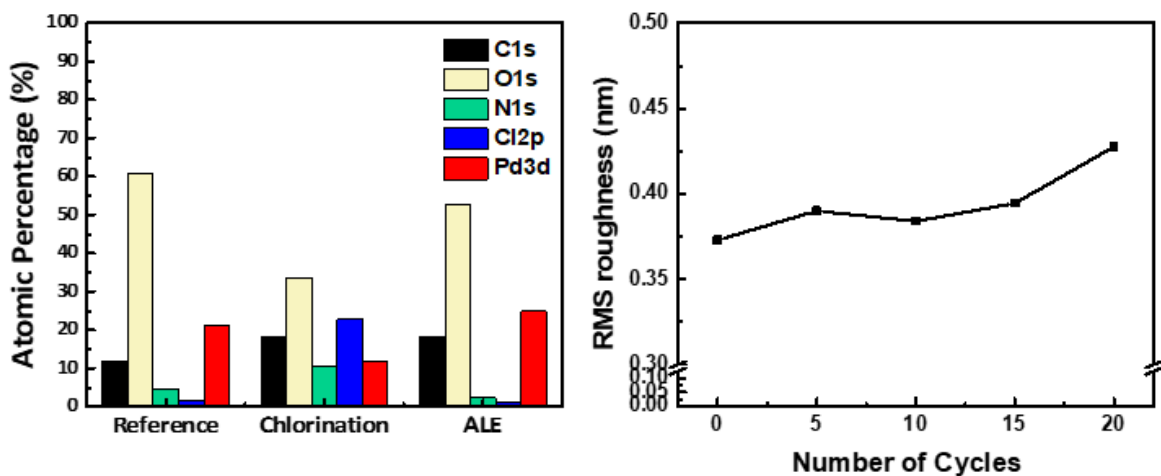


Figure 3. (a) Chemical compositions of Pd films with before etching and after ALE process. (b) RMS roughness of Pd films depending on the etch process.