

Conformality in aluminum oxide ALD process analyzed using the 3rd-generation silicon-based lateral high-aspect-ratio test structures

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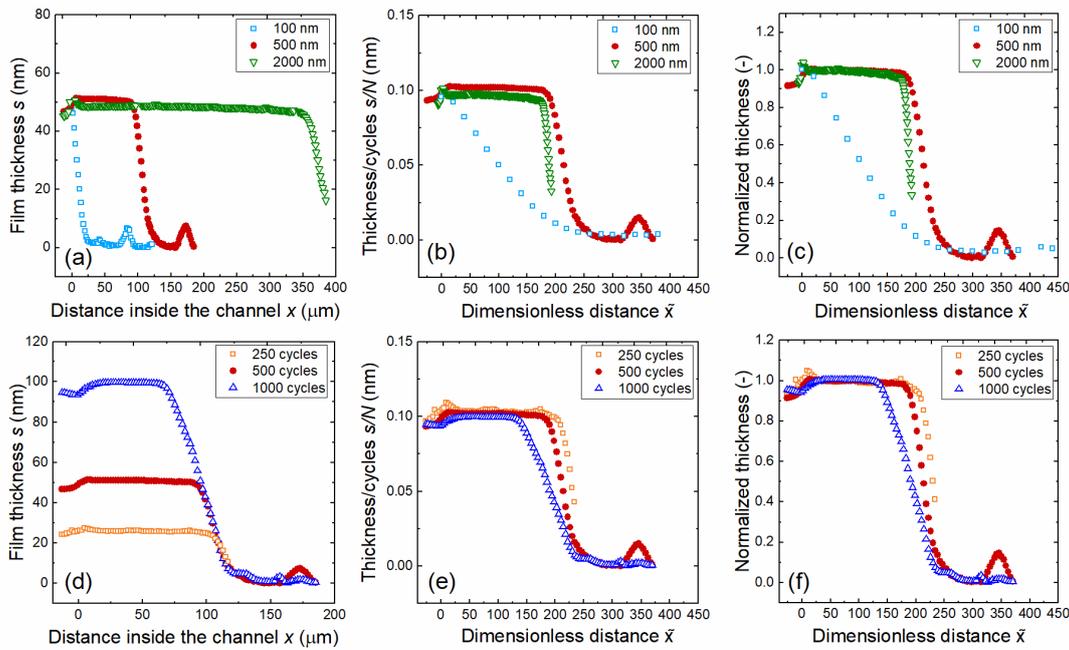


Figure 1. (a) As-measured saturation profiles, (b) scaled saturation profiles, and (c) normalized saturation profiles of ALD Al_2O_3 films made in 500 cycles on PillarHall-3 with different channel heights (100, 500, and 2000 nm). (d) As-measured profiles, (e) scaled saturation profiles, and (f) normalized saturation profiles of ALD Al_2O_3 films made in different ALD cycles on the test structure with the nominal channel height of 500 nm. TMA-water-TMA-water sequence of (0.1-4.0-0.1-4.0) s used at 300 °C of ALD temperature.

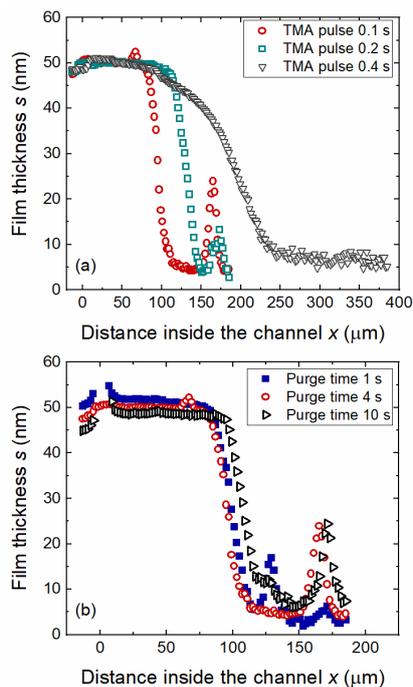


Figure 2. The thicknesses of Al_2O_3 ALD film grown at 300 °C using (a) different TMA pulse times and (b) purge times in PillarHall-3 with the nominal channel height of 500 nm were measure by reflectometer with the spot size of ca. 5 μm . ALD cycles of 500 used.