ALD of Aluminum Fluoride Using $Al(CH_3)_3$ and SF_6 plasma

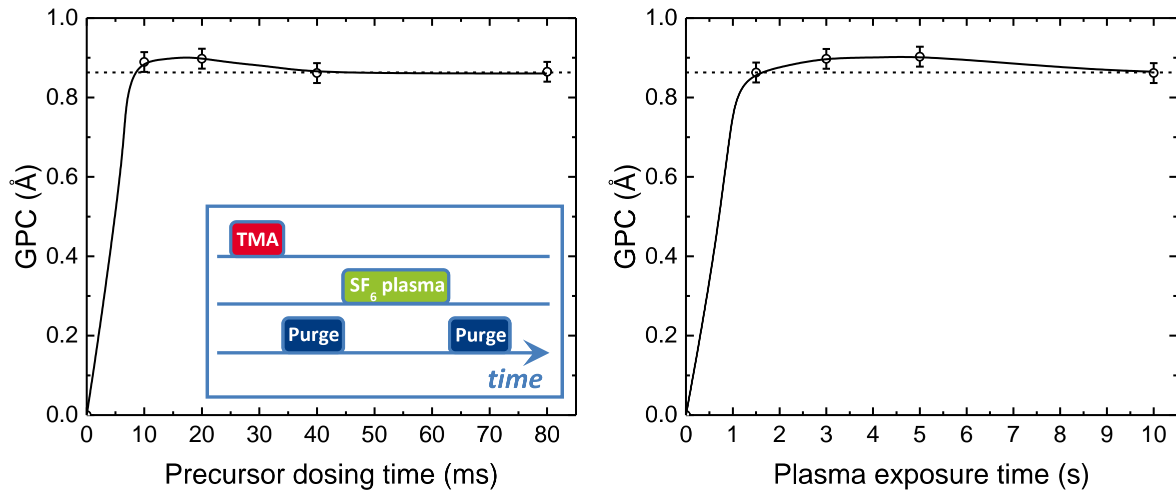

Fig. 1. (left) Growth per cycle (GPC) as a function of TMA dosing time for a constant plasma exposure time of 10s. (inset) Schematic of the ALD process. A typical ALD cycles is started with a TMA dose of 80ms, followed by a purge step of 6s, a plasma exposure of 10s, and a final purge step of 4s. (right) GPC as a function of plasma exposure time for a precursor dosing time of 40ms. Both saturation curves were determined at a deposition temperature of 200°C. The lines serve as guides to the eye.

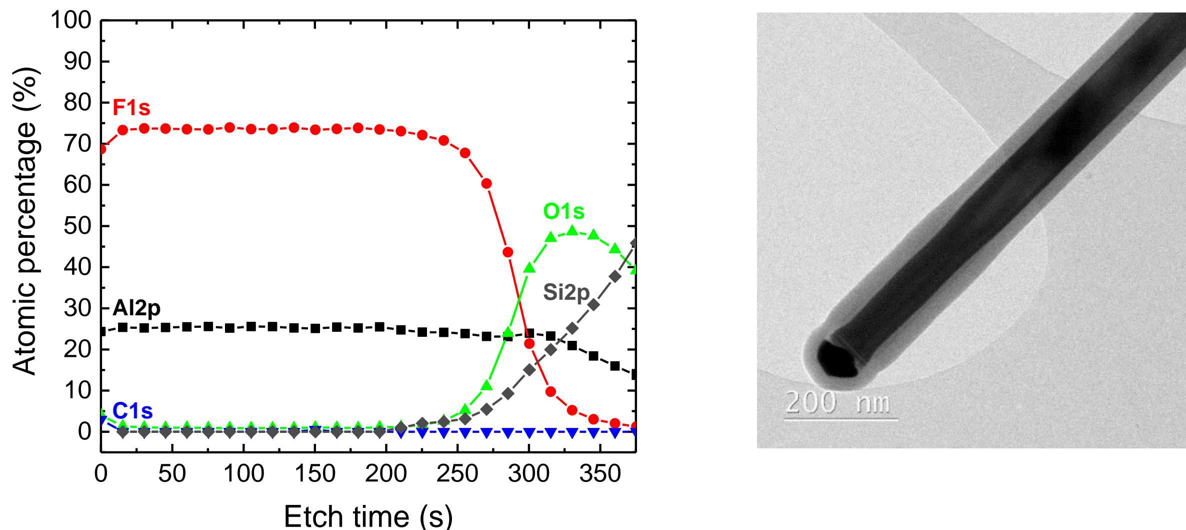

Fig. 2. (left) XPS depth profile for an AlF_3 sample of approximately 35nm thick deposited at 100°C. No S and C were detected in the bulk of the film, and the amount of O incorporation is minimal (~1at.%). (right) AlF_3 film of approximately 26nm thick on a GaP NW, showing good conformality. For both figures 300 ALD cycles were performed using TMA doses of 80ms and SF_6 plasma exposures of 10s.