

Parameters	TSA Precursor	DIS Precursor
ALD cycle time	~ 8 s	26 s
Precursor pulse time	15 ms	4 s
Growth rate per cycle	0.19 nm	0.046 nm
Precursor consumption	0.3 g/nm	0.8 g/nm
Economical value	4.6 €/nm	14.2 €/nm

Table 1: Comparison of TSA and DIS in terms of ALD process parameters

Etchant	TSA + (N <sub>2</sub> +H <sub>2</sub> )		DIS + N <sub>2</sub>	
	As-deposited (nm/min)	Annealed (nm/min)	As-deposited (nm/min)	Annealed (nm/min)
Hydrofluoric acid (1:100)	1.5	0.4	1.49	0.6
Phosphoric acid	10.05	5.48	7.75	4.75

Table 2: Etch rate comparison of TSA and DIS PEALD process for as-deposited and annealed films in hydrofluoric acid and phosphoric acid