High Aspect Ratio Si Pillars Etch

Pillar Diameter: 1.0-1.5μm
Etching Mask: 50 nm Al

Process Condition

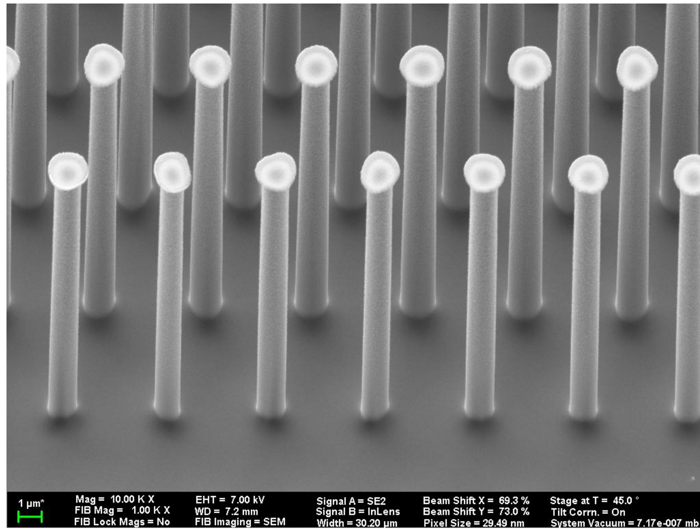
Parameter	Value
C4F8 (sccm)	160
SF6 (sccm)	70
Pressure (mTorr)	20
Coil Power (W)	1200
Platen Power (W)	12
Temperature (°C) (lid/wall/chuck)	40/40/21

Result

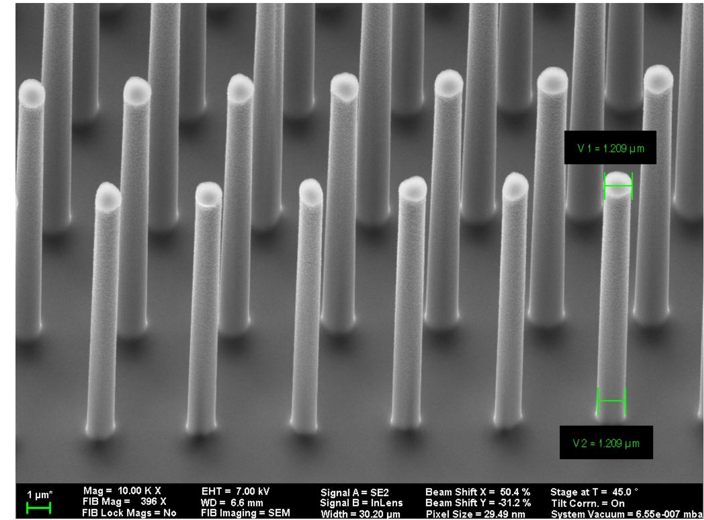
Etch Rate (μm/min)	0.17
Etch Profile	89.5°
Selectivity to Al	>100:1

Note: Profile = $\tan^{-1}(2H/(D_b-D_t))$,
H: etch depth, D_t = top diameter, D_t = bottom diameter
Selectivity = etch rate of Si/etch rate of Al

High Aspect Ratio Si Pillars Etch



10μm in depth and 1.2-1.5 μm in diameter Si pillars, before Al mask was removed



After Al mask was removed