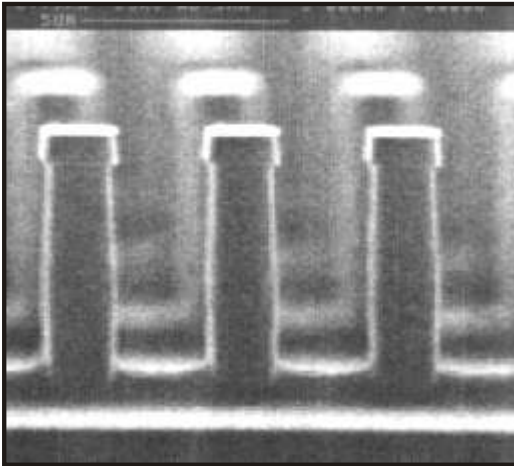
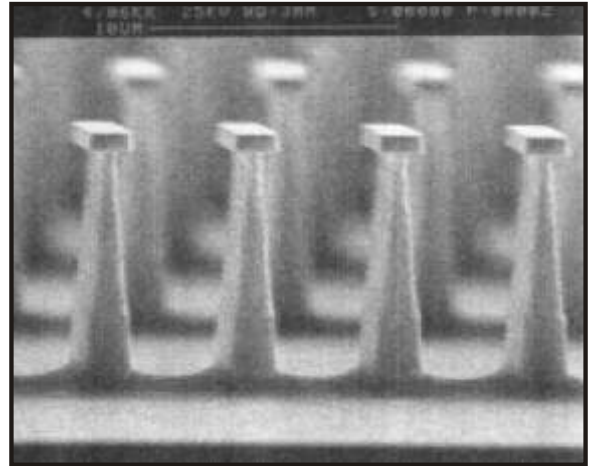


Plasmalab Data

Anisotropic Si RIE by Sidewall Passivation



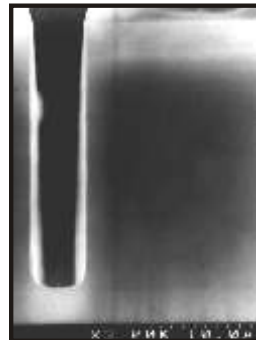
OPT application lab:
5 μm deep, anisotropic etch



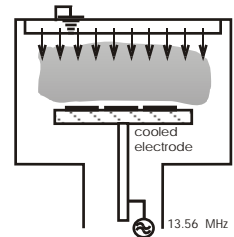
OPT application lab:
10 μm deep etch with profile control



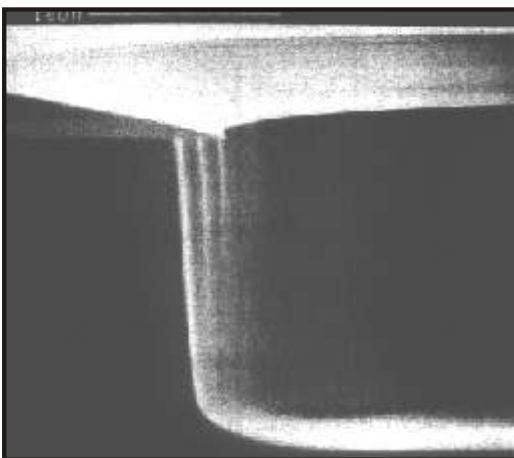
1,6 μm deep, anisotropic etch
(SiO₂ mask still in place)



10 μm deep etch
by Uni Kassel



Plasmalab 80 Plus
Plasmalab 800 Plus
Plasmalab System 100
Plasmalab System 133



15 μm deep, anisotropic etch
(1,8 μm uniform undercut under the SiO₂ mask)

- etch rate > 0.5 $\mu\text{m}/\text{min}$ with SF₆/ O₂
- > 0.05 $\mu\text{m}/\text{min}$ with CF₄/ O₂
- uniformity < $\pm 5\%$ (100 mm wafer)
- selectivity to positive photoresist up to 10:1
- selectivity to silicon dioxide > 30:1
- undercut typically 10% of depth

The undercut is very dependent on silicon load (wafer size, pattern density) and the total gas flow. The selectivity to resist or oxide can be increased by reducing the DC bias.

The process strategy to achieve the anisotropy in F based Si RIE is best explained by the "black Si method" described by TU Twente.