OXFORD INSTRUMENTS

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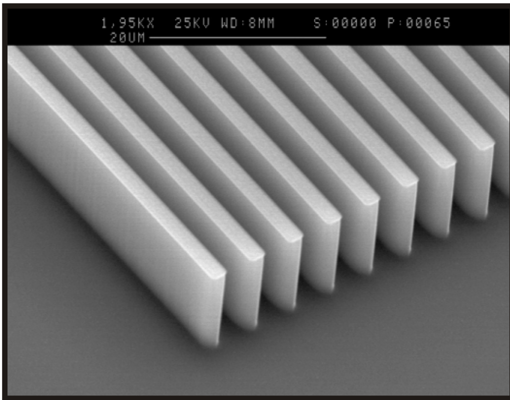
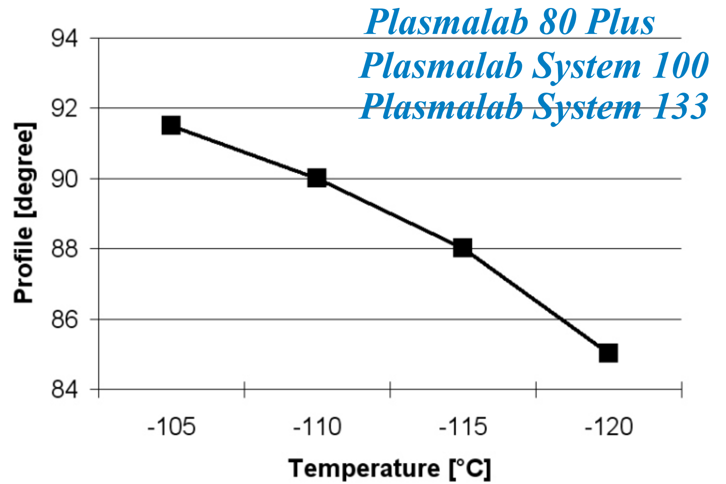
Plasmalab Data

Deep Si Etching by Cryo ICP

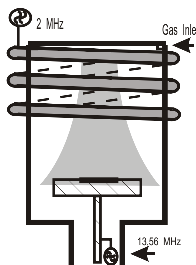


OPT application lab:
2 µm Si waveguides 10 µm deep Si waveguides
1550nm signal processing
Extremely smooth and clean anisotropic etch
Si etch rate 2-3 µm/min
Si : SiO2 mask >200:1
(PR also possible >100:1)

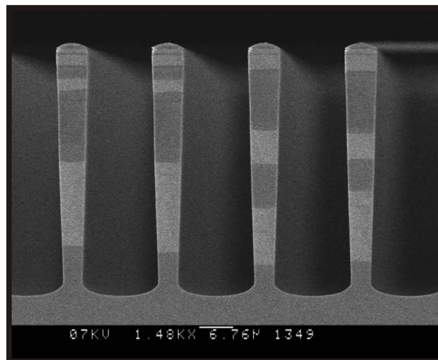


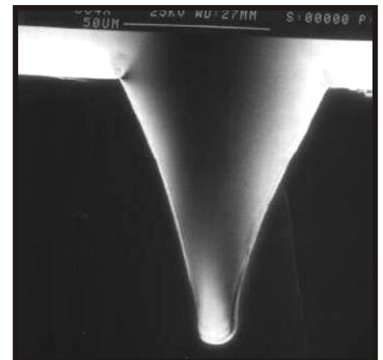
OPTs wide temperature range substrate electrode allows to etch at any temperature between - 150° c and + 400° C !

OPT Application lab:
cryo etch profile control



OPT application lab:
Cryo etched 50nm feature
Roughness < 10 nm
Shallow etches controllable





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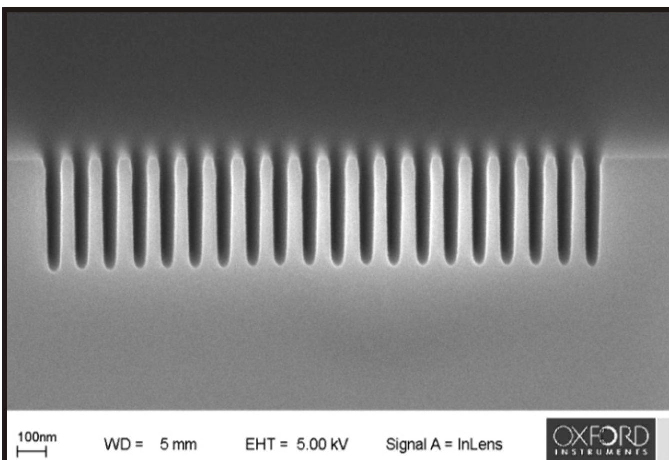

Deep Etching MEMS and Nano Structures:
Advantages of Cryogenic Etch

Wide range of profile control (80° to 92°)
by simple process variation
High aspect ratio for deep etches
Smooth profiles (no scallop roughening like Bosch)
Good uniformity (<±3 % achievable on 200 mm wafers)
Very high selectivity over photoresist
and SiO2 masks
Simple and extremely clean plasma chemistry:
SF6-O2 (no fluorocarbons)
almost no chamber cleaning

High aspect ratio for nanoscale etches
Very fine features < 50 nm lines and gaps