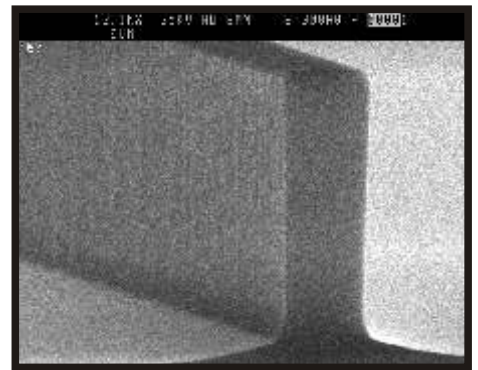
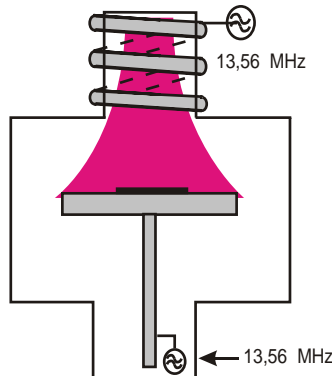
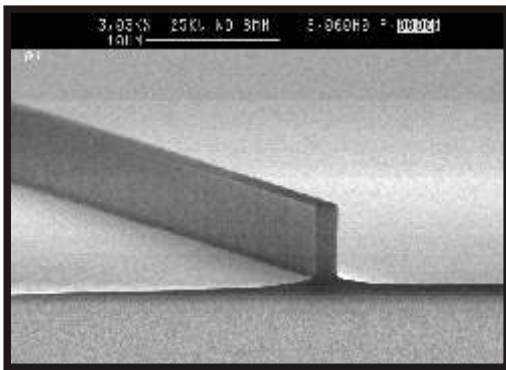


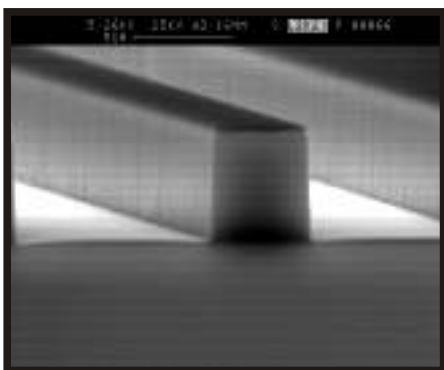
Plasmalab Data

InP/ InGaAsP Waveguide ICP Etching

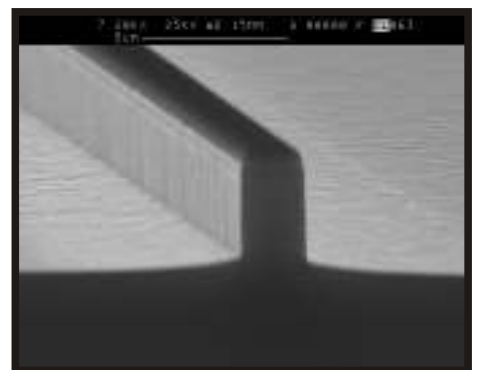


Top SEM's:
Cl₂, CH₄, H₂, Ar process
10 µm deep InP/ InGaAsP etch
process chemistry: Cl₂, CH₄, H₂, Ar
rate > 1.5 µ/ min
selectivity > 15:1 to SiO₂ or SiN_x mask
uniformity < +/- 4 % (50 mm diameter)
excellent profile control

COMPARISON
The CH₄/H₂/Cl₂ process does not need wafer clamping or a heated electrode, so it simplifies the hardware and allows the use of wafer pieces or batches of full wafers on a carrier plate.
The Cl₂/N₂ process offers a cleaner alternative, but requires a heated electrode and wafer clamping, i.e. only suitable for full wafers (or small pieces glued to a carrier wafer). The HBr process in addition offers the possibility of resist masked high rate InP etching.



Technology:
Reactive Ion Etching
with ICP Source (13 MHz)
Inductive Coupled Plasma
RF driven substrate electrode
Plasmalab 80 Plus
Plasmalab System 100
Plasmalab System 133



Cl₂/ N₂ process
5 µm deep etch in InP/ InGaAsP
process chemistry: Cl₂, N₂
rate > 1 µ/ min
selectivity > 10:1 to SiO₂ or SiN_x mask
uniformity < +/- 4 % (50 mm diameter)
excellent profile control

HBr process
6 µm deep waveguide in InP/ InGaAsP
process chemistry: HBr
rate > 0.8 µ/ min
selectivity > 10:1 to SiO₂ mask
PR mask possible !
uniformity < +/- 4 % (50 mm diameter)
good profile control