IP-06
www.oxfordplasma.de/process/sind_icp.htm

OXFORD INSTRUMENTS

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November 2004
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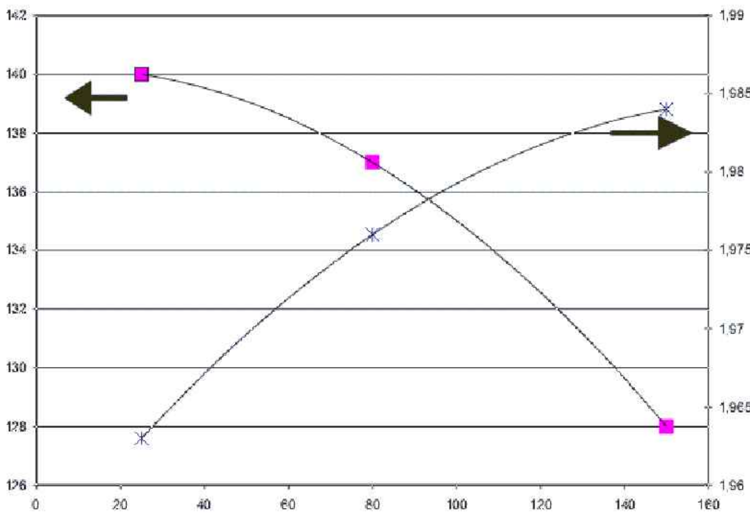
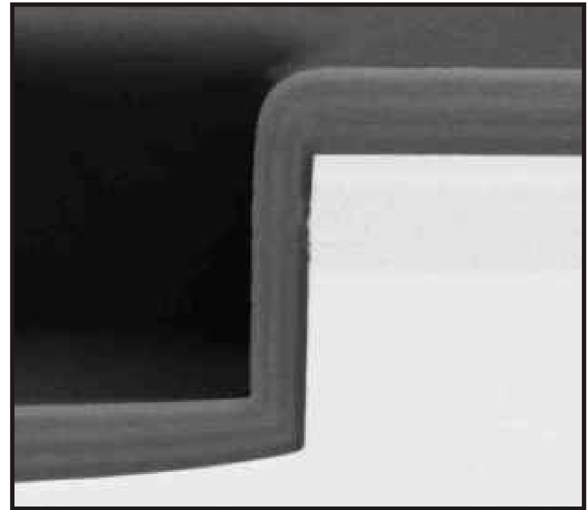
Plasmalab Data

ICP - PECVD: SiN



OPT application:
rate in A/ min (LHS) and refractive index (RHS)
vs deposition temperature (^{0}C)

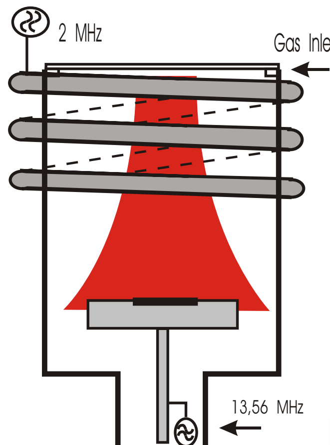


SiO_2 / Si_3N_4 mulilayer deposited
over a 5 micron step

Plasmalab 80 Plus

Plasmalab System 100

Plasmalab System 133



ICP Source Design: ESS
All OPT ICP and RF sources are designed with an “electrostatic shield” (ESS) to ensure a purely inductive plasma coupling without a capacitive component.
Therefore contamination by “wall sputtering” and ion induced substrate damage is excluded.

Source to Substrate distance
This distance can be varied over a wide range for optimal process control.

PECVD
with ICP Source (2 or 13 MHz)
Inductive Coupled Plasma
RF driven substrate electrode

deposition temperature: 20 - 100 °C
low pressure (< 10 mtorr) for best electrical quality
NH3 free process

rate: 5 - 100 nm/min
good uniformity over up to 6” wafer
breakdown voltage > 4 MV/ cm
The refractive index can be adjusted from 1.77 to 2.54.
stress: < 100 MPa
variable from 25 MPa compressive to
25 MPa tensile (without bias) for membranes
no N-H bond absorption peaks found in
infrared transmission spectra