

SiO₂ DEPOSITION**DEPOSITION/ETCH (PLANARIZATION - VOID-FREE DIELECTRIC)**SiO₂ DEPOSITION

Gases	.....N ₂ O.....	900 sccm	45%
	2% SiH ₄ /N ₂	400 sccm	40%
Pressure	.....	900mT	
R. F.	.....	20W	
Electrode space	.....	0.9"	
Temperature	.....	70-350°C	

Gas Channels	.....0-2000 N ₂	(N ₂ O)
	0-1000 N ₂	(SiH ₄ /N ₂)
	0-2000 N ₂	(N ₂)

SiO ₂ deposition rate	.....	400-500Å/min.
Refractive index	.....	1.46-1.47
Uniformity	.....	< ± 3%
Film stress	.....	3X10 ⁹ dynes/cm ² compressive

TEMPERATURE

Temperature is chosen to be compatible with substrate material e.g. GaAs substrates recommended temperature is 250°C; silicon substrates 350°C is recommended. Film quality (particularly reduction in H content) improves at higher temperature.

GAS FLOW

Refractive index is only slightly dependent on gas flow ratio. n_f increases as N₂ flow decreases. Increase in SiH₄ flow increases deposition rate with some loss in uniformity.

POWER

Increase in power increases deposition rate with some loss in uniformity.