

| Advanced PECVD-LS Nitride2(n=1.93,-40MPa, 8.3nm/min) | | | Advanced PECVD Typical Film Properties | | |
|---|------------|------------|--|--|--|
| LS Nitride 2 deposition~2400A, 300C | | | Calibrated every 2-4 weeks | | |
| Step1: NITRIDE2 coat | | | Check for the latest update on UCSB Nanofab WIKI | | |
| Name | Value | Changeable | | | |
| LF on time(ms) | 1000ms | Y | | | |
| LF setpoint | 90W | Y | | | |
| Process pressure | 800 mtorr | N | | | |
| RF on time(ms) | 6000ms | N | | | |
| RF setpoint | 30 W | N | | | |
| stabilization time | 15 seconds | N | | | |
| step time(m) | 10 min | Y | | | |
| step time(s) | 0 sec | Y | | | |
| 2%SiH4 %He | 1040sccm | N | | | |
| N2 | 980sccm | N | | | |
| NH3 | 18sccm | N | | | |
| Step2: NITRIDE2 deposition | | | LS Nitride2~2400A Typical Film Properties | | |
| Name | Value | Changeable | Deposition rate=8.3nm/min | | |
| LF on time(ms) | 1000ms | Y | Refractive index@632.8nm=1.938 | | |
| LF setpoint | 90W | Y | Stress=-4MPa | | |
| Process pressure | 800 mtorr | N | HF etch rate=46nm/min | | |
| RF on time(ms) | 6000ms | N | All size particles accumulated in deposition (min=43, max=453) | | |
| RF setpoint | 30 W | N | Mostly small size particles (0.160-0.213)um | | |
| stabilization time | 15 seconds | N | Uniformity within the wafer (97.59-99.80)% | | |
| step time(m) | 30 min | Y | | | |
| step time(s) | 0 sec | Y | | | |
| 2%SiH4 %He | 1040sccm | N | | | |
| N2 | 980sccm | N | | | |
| NH3 | 18sccm | N | | | |
| Step3: STANDARD PLASMA CLEAN | | | | | |
| 1. pump down | | | | | |
| Name | Value | Changeable | | | |
| stabilization time | 15 seconds | N | | | |
| step time(m) | 0 | N | | | |
| step time(s) | 30 | N | | | |
| 2. Pre-purge | | | | | |
| Name | Value | Changeable | | | |
| purge | 1 (Yes/No) | N | | | |
| stabilization time | 15 seconds | N | | | |
| step time(m) | 1 | N | | | |
| step time(sec) | 0 | N | | | |
| 3.1 High Pressure | | | | | |
| Name | Value | Changeable | | | |
| Cload position | 50% | N | | | |
| Ctune position | 50% | N | | | |
| DriveMatch | 1 (Yes/No) | N | | | |
| Process pressure | 600 mtorr | N | | | |
| RF setpoint=300 | 300 W | N | | | |
| Stabilization time | 35 seconds | N | | | |
| step time(m) | ENTER TIME | Y | For 7min(coat+deposition) run 1min Standard Plasma Clean | | |
| step time(s) | 0 | Y | Run longer clean, (10-20%) more, only if chamber does not look clean | | |
| CF4/O2(S) | 500 sccm | N | | | |

Recipe

LSNitride2 (n-1.97 -40MPa 9.0nm/min)

Recipe parameters

| Number | Name | Name | Process value | Unit | Changeabl |
|--------|------|--------------------|---------------|---------|-----------|
| 01 | 01 | Process pressure | 800 | mtorr | N |
| | | RF on time (ms) | 6000 | ms | N |
| | | RF setpoint | 30 | W | N |
| | | Stabilisation time | 15 | seconds | N |
| | | Step time (m) | 10 | minutes | Y |
| | | Step time (s) | 0 | seconds | Y |
| | | 2%SiH4:He (1) | 1040 | sccm | N |
| | | N2 (3) | 980 | sccm | N |
| | | NH3 (2) | 18 | sccm | N |