



IIT Bombay Nanofabrication Facility

Tool Name: Rapid Thermal Processing (RTP)

Glimpse

INDEX

Contents

Photograph	1
Specifications	2
Applications	2
Process Capabilities.....	2

Photograph



The rapid thermal processor has the capability to run the following processes (a) Rapid thermal annealing of compound semiconductors (b) Rapid Thermal Oxidation (RTO) (c) Rapid Thermal Nitridation (RTN)

Model: ANNEALSYS AS-ONE 150

Specifications

1. **Temperature range:** RT to 900°C
2. Max Ramp Rate 25°C/s (for Si) 15°C/s (for Susceptor)
3. Max. Safe Ramp Rate (for Si processing) - 25°C/s
4. Max. Safe Ramp Rate (for III-V processing using Graphite Susceptor) - 15°C/s
5. Gas mixing capability with mass flow controllers 6. **Vacuum range:** Atmosphere approx. to 1 mBar

Applications

1. RTA (Rapid Thermal Annealing RTO (Rapid Thermal Oxidation) Diffusion
2. Compound semiconductor annealing Nitridation, Silicidation Crystallization and Densification

Process Capabilities

1. Substrates used: Silicon, III-V (GaAs, GaN on sapphire)
2. Substrates can be used but NOT available: any III-V semiconductor
3. Substrate size: Small pieces, from 2" quarter to 4" in Si carrier wafer (Pyro 1) and from small pieces to 6" in Susceptor (Pyro 2)
4. Substrate temperature: RT to 900°C (max)
5. Gases used: Ar, Process N₂, O₂, and NH₃
6. Chamber base vacuum: Atmosphere approx. to 1 mBar (presently best base vacuum available with Rotary Pump connected is only 1 mBar)
7. Annealing processes are done in cycles of 30 sec each (above 800C) and 60 sec each (below 800C). Continuous annealing for more than 60 sec. in a single cycle is prohibited.

