

Inductively coupled plasma CVD (ICPCVD)

The presence of plasma enables the chemical vapour deposition at low temperatures.

Model: Plasma lab system100 ICP 180

Process Capabilities:

- **Types of depositions:** Silicon dioxide, Silicon nitride, silicon oxynitride, and amorphous silicon
- **Types of substrates:** 2", 4", 8", small pieces of wafers - Si and glass
- **Substrate History:** Metal coated wafers need to be discussed before processing
- **Temperature of substrate:** Room temp to 350 °C
- **Process gases used:**
 - Silane** for Si₃N₄, SiO₂, SiO_xN, a-Si
 - Nitrogen** for Si₃N₄, SiO_xN
 - Nitrous oxide** for SiO₂, SiO_xN
 - Ammonia** for Si₃N₄
 - Argon** for Plasma
 - CF₄/O₂** for Plasma clean gas
- **Load lock chamber vacuum:** 10e-3 Torr
- **Process chamber vacuum:** 10e-6 Torr



Specifications:

- **Diameter of the Process chamber** - 380 mm
- **Internal-diameter of ICP source** -180 mm.
- **ICP source** - alumina tube surrounded by a copper coil; connected to RF, 13.56MHz.
- **Diameter of the lower electrode** - 300 mm.
- **Lower electrode** - connected to 13.56MHz generator for independent control of bias voltage.
- **He pressure** - applied to the back of wafers to provide good thermal contact between lower electrode and wafer.
- **All process gases pass through a transmission disc.**
- **Silane is introduced into Process chamber through a gas distribution ring.**

