PAUL SCHERRER INSTITUT

PSI

PICO

Picosun PE-ALD

Responsible

Vitaliy Guzenko

System Description

The “Picosun PE-ALD” is a Plasma Enhanced Atomic Layer Deposition, model R-200 from Picosun. It is equipped with a loadlock with automatic transfer of wafers up to 200mm and manual loading for substrates below 10cmx10cmx10cm.

ALD is a vapor deposition method which uses sequential, self-limiting surface reactions to deposit thin films one monolayer at a time. This provides precise thickness control and highly conformal thin films for coating of 3D high aspect ratio structures, TSV side walls or porous materials.

Samples

- Wafers - up to 200 mm diameter (8 inch)
- 3D samples
- porous materials
- Powders and particles

Materials restrictions:

Plasma assisted low temperature (120C) deposition of AlOx on samples with resist is possible.

Please check the material and temperature compatibility with LNQ-PICO staff.

Precursors and gas lines available:

2 reservoirs for solid precursors heated up to 200C: currently installed Ir(acac)3 [Iridium(III)-acetylacetonat], TDMAH [tetrakis(dimethylamido) hafnium]

2 reservoirs for liquid precursors, currently installed TMA (Trimethylaluminum) and H_2O; other possible (e.g. $TiCl_4$ or TDMATi [Tetrakis(dimethylamido) titanium).

2 gas lines: WF_6, SiH_4, others possible

Process gasses: O_2, H_2.

Purge gasses: Ar, N_2.

Substrate holder temperature:

Substrate Temperature: 50°C - 500°C, plasma 450°C

Materials:

Oxides: Al_2O_3, HfO_2,

Metals: Ir, W, (Ru).

Deposition rates: ~1 Å/cycle, process dependent.

The Tungsten can be deposited also in CVD mode with higher rates, please ask.

Check the short manual, process sheets and the internal wiki page for more details.