

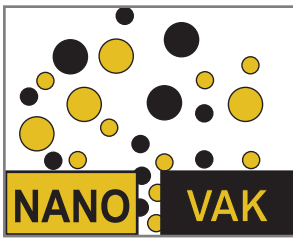
# NANOVAK

NANOVAK® offers global products

## E-Beam System



Water cooled cylindrical/prismatic vacuum chambers are produced out of SS304 materials. This system have 1-2 thermal and/or 4-crucible e-beam sources enabling the user to do full co-evaporation. Typical properties of the system are given below. Multi-layered thin films of different materials can be prepared by NVEB system. NANOVAK® E-Beam System can be tailored to fit user desires in order to produce multilayered, nanosize metallic, oxide, carbide or nitride films.



# NANOVAK

NANOVAK® offers global products

## E-Beam System



- Fully automatic computer control and/or automatic panel control with real time LCD displays, easy to go through doors
- Prismatic / cylindrical vacuum chamber made of SS304. In 40/50/60 cm sizes. Feather-touch clean, electro-polished surface, SS304 liner, water cooled surfaces
- UV-blocking, front observation window, rotatable shutter. Shutter-thickness control via PC
- Standard 1", QF, CF, ISO ports as desired. Easy upgrade to add on additional thermal and e-beam sources
- Internal lighting and baking unit and internal baking up to 125°C
- Turbomolecular + Mechanical pump, and dry pump as desired, high pumping speed
- Throttle, vent and isolation valves, The chamber remains under vacuum with an isolation valve when not in use
- $10^{-8}$  Torr base pressure level,  $10^{-7}$  Torr vacuum level in one hour, for fully loaded system
- 10 KV, adjustable power supply, 500 mA beam current. Arc protection ability
- Ability to evaporate Al, Pt, Ni, ... metals and oxides  $TiO_2$ ,  $SiO_2$ , at high rates
- Wide range ( $1000 - 10^{-9}$  Torr) vacuum control and measurement, ability to fix pressure to desired values, 2<sup>nd</sup> capacitance manometer
- 50-800°C PID controlled sample heating,  $\pm 1^\circ C$  sensitivity, 1-10 cm sample attachments, 3", 4", 6" wafer loading ability
- 2-30 rpm sample rotation unit, continuous adjustment ability, panel-PC control, better than 3% homogeneity across sample for 4" samples
- ICP, CCP, DC-RF sample plasma cleaning unit, pressure adjustment
- Automatic closed loop water cooling system, interlock controlled, automatic on-off process control to prevent premature use of power without water
- 0.1 Å/s dual-channel precision thickness-rate measuring unit with two QCM's
- One or two 12V-180A sequential, 2x2 channel, thermal sources for co-evaporation and doping. Ability to prevent cross contamination, easy replacement of sources
- Digital Mass flow meter controlled gas inputs (Ar,  $N_2$ ,  $O_2$ , He,  $CH_4$ , ...), easy mix of gases, 0.2 SCCM sensitivity, panel or PC control
- 1.5 hour experiment cycle-time, possibility for 4-6 experiments per day, 2 year warranty