

# NANOVAK

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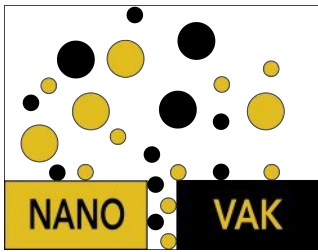
VAK

NVEB-600

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## E-Beam Systems

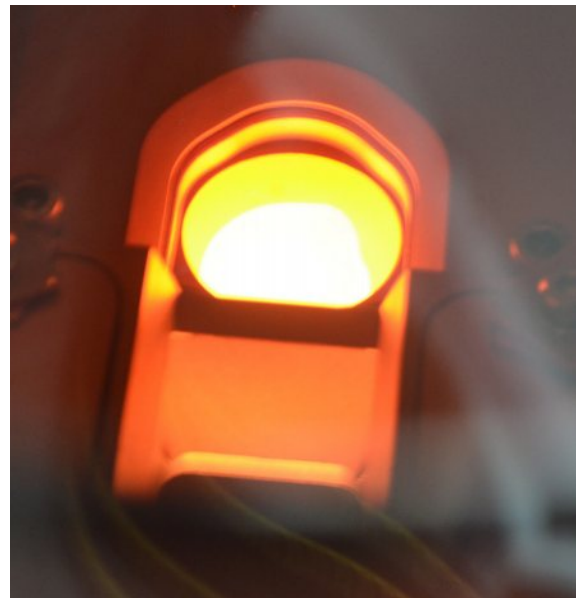
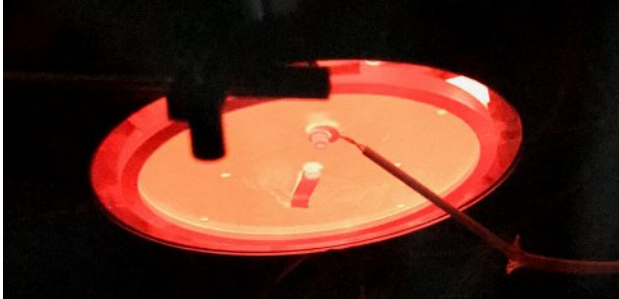
Water cooled cylindrical/prismatic vacuum chambers are produced out of SS304 materials. This system have 1-2 thermal and/or 6-crucible e-beam sources enabling the user to do full co-evaporation. Typical properties of the system are given below. Multilayered thin films of different materials can be prepared 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.



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## E-Beam Systems



- Prismatic / cylindrical vacuum chamber made of SS304. Feather-touch clean, electro-polished surface, SS304 liner, water cooled surfaces
- Standard 1", QF, CF, ISO ports as desired. Easy upgrade to add on additional thermal sources
- UV-blocking, front observation window, rotatable shutter. Shutter-thickness control by LabVIEW program
- Turbomolecular + Mechanical pump, and dry pump as desired, high pumping speed.  $10^{-8}$  Torr base pressure level,  $10^{-7}$  Torr vacuum level in one hour, for fully loaded system
- Throttle, vent and isolation valves, The chamber remains under vacuum with an isolation valve when not in use
- Fully automatic computer control and/or automatic panel control with real time LCD displays
- Automatic closed loop water cooling system, interlock controlled, automatic on-off process control to prevent premature use of power without water cooling
- 10 KV, adjustable power supply, 600 mA beam current. Arc protection ability
- Ability to evaporate metals like Al, Pt, Ni and oxides like  $TiO_2$ ,  $SiO_2$ , at high rates with recipe control
- Wide range ( $1000 - 10^{-9}$  Torr) vacuum control and measurement, ability to fix pressure to desired values
- 50 - 700 °C PID controlled sample heating,  $\pm 1$  °C sensitivity, 1 - 15 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
- 0.1 Å/s dual-channel precision thickness-rate measuring unit with two QCM's, ion gun implementation
- 8V - 300A, 2500W sequential, 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
- Two year warranty for materials, design and workmanship