

6. Vertical Condensation

- Peltier based thermal plate (cold stage)
 - Programmable precision temperature control from -30°C to 90°C
 - Low surface temperature gradients
 - Temperature Resolution: 0.01°C
 - Temperature Stability: $\pm 0.05^{\circ}\text{C}$ at 37°C
 - Temperature Uniformity: $\pm 0.1^{\circ}\text{C}$ per cm
 - Minimum Heating and Cooling Rate: $\pm 0.1^{\circ}\text{C}$ per hour
 - Maximum Heating Rate: $+30^{\circ}\text{C}$ per minute at 37°C
 - Temperature Control Method: PID with Linear Variable DC
 - Temperature Control Sensor: $100\ \Omega$ Platinum RTD
 - Surface Flatness: $15\ \mu\text{m}$ at ambient temperature
 - Sample Area: $101\ \text{mm} \times 101\ \text{mm}$
- Temperature controller for thermal plate
 - 24 bit analog to digital converter
 - Dual PID outputs for precise heating and cooling
 - Includes WinTemp software for simple computer control and data handling
 - Up to 20 calibration points
- Imaging: DSLR camera, Ring light, Microscope lens adapter, Objective lens
- Instrumentation: Steam generator, Chiller (cooling water supply for thermal plate), Computer with data collecting software
- Purpose: This vertical condensation setup test condensation behavior of various surfaces. Especially, high resolution imaging setup could resolve detailed droplet distribution on surfaces and monitor droplet shedding on surfaces.

