23. **Durability of Surfaces Due to Droplet Sliding (MEL 2409)**

- **Purpose:** Testing degradation of Lubricant-infused surfaces (LIS) due to condensation and/or continuous sliding of water droplets falling on the sample surface.
- **Operation:** The weight loss of surface is a measure of the lubricant drainage from such surfaces.
  1. Transmittance test: Glass is coated with SiO2 particles. The surface is infused with lubricant. Droplets rolling off the inclined sample damage the surface. Mass and optical transparency of the sample are measured during the process.
  2. Reflectance test: CuO is coated with HTMS (HeptadecafluorodecylTriMethoxySilane) and infused with lubricant. Shear damage by droplets will damage the surface. Mass and optical reflectance of the sample are measured.
  3. Condensation test: Condensation on CuO-HTMS-Lubricant LIS damage the surface. The process is under ambient air with 70% relative humidity, surface temperature 5 °C)
- **Equipment**
  - Analytical mass balance (Sartorius 224i-1sus, capacity: 220 g, readability: 0.1 mg)
  - Laser (wavelength: 650 nm, Output power: 50 mW)
  - Photo-detector (Edmund optics EO100-Si-HA-OD1, spectral range: 420 to 1080 nm, resolution: 1.5 pW)
  - Chiller (Polyscience 6100 series chiller, Working fluid: DI water, Temperature range: -10 to 40 °C, Temperature stability: 0.1 °C)