

Aarhus SPM Key Features:

Generally:

- easy to use, efficient, robust and reliable design
- ultra high mechanical stability
- integral two-stage vibration isolation, no need for external vibrational damping in most labs
- atomic resolution achievable at all sample temperatures
- ultra high thermal stability due to high thermal mass
- optimized temperature regulation and well defined thermal paths for fast thermal equilibrium
- variable temperature imaging over hundreds of kelvins without losing field of view or Z-range
- fast sample transfer
- fast data acquisition
- high approach speed of up to 1 mm/min
- fully automated tip approach within ca. 10 minutes
- no need for tip exchange
- tip life times exceed years thanks to in-situ tip cleaning and sharpening by ion sputtering
- 3 ports for optical (one specular pair) or deposition/dosing access to sample/tip junction
- no internal or external magnetic fields

STM

- temperature range 90-400 K
- thermal stability < 0.1 K per hour
- lateral drift < 0.15 nm/min
- vertical drift < 0.05 nm/min
- scan speed up to 20 images/sec with standard scanner and Aarhus electronics

HT-STM

- temperature range 90-1300 K
- radiative heating for all types of samples (metal, semiconductor, insulator)
- imaging at up to 1300 K sample temperature with radiative heating
- scan speed up to 20 images/sec with standard scanner and Aarhus electronics

SPM

- temperature range 90-400 K
- nc-AFM, STM and combined measurements with KolibriSensor, a stiff quartz length extension resonator (LER) with a resilient tungsten tip
- clearly separated signal paths for tunneling and oscillation signals
- nc-AFM imaging at STM speed due to high sensitivity and 1 MHz resonance frequency sensor
- fast data acquisition (atomically resolved images of Si(111) surface with scan speeds up to 5 ms per line with Nanonis control system)
- optionally scan speed up to 20 images/sec with standard STM tip and Aarhus electronics

HT-SPM

- imaging temperature range 90-600 K with KolibriSensor or 90-1300 K with standard STM tip
- nc-AFM, STM and combined measurements with KolibriSensor, a stiff quartz length extension resonator (LER) with a resilient tungsten tip
- clearly separated signal paths for tunneling and oscillation signals
- nc-AFM imaging at STM speed due to high sensitivity and 1 MHz resonance frequency sensor
- fast data acquisition (atomically resolved images of Si(111) surface with scan speeds up to 5 ms per line with Nanonis control system)
- optionally scan speed up to 20 images/sec with standard STM tip and Aarhus electronics