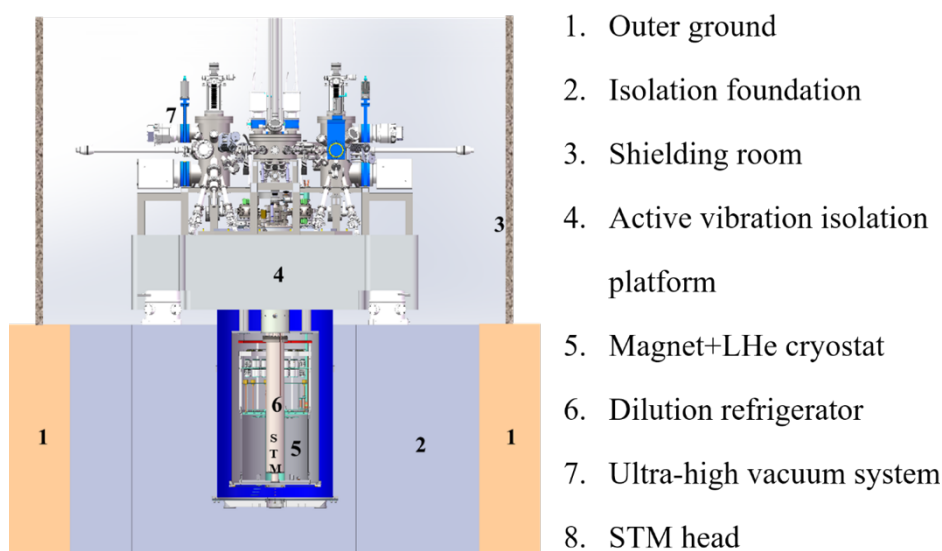


Ultra-low temperature high magnetic field scanning tunneling microscopy station

Ultra-low temperature high magnetic field scanning tunneling microscopy (STM) station is mainly composed of dilution refrigerator (DR), superconducting magnet, ultra-high vacuum system, vibration isolation-electromagnetic shielding unit and STM measurement unit. The base temperature of STM head can reach as low as 10 mK and the highest magnetic field is 20 T. By optimizing the RF filter, vibration damping and reducing the noise in the measurement electronics, the spatial resolution, energy resolution and stability of STM measurement can be enhanced to a competitive level. The home-made STM head is mounted on the bottom plate of the top-loading DR insert. The ultra-high vacuum system provides the *in situ* treatments of sample surface and growth of film materials.



Schematic diagram of the STM station

Main Specifications of STM station

Parameters	Values
Base temperature	10 mK
Maximum magnetic field	20 T
Diameter of magnet bore	100 mm
Continuous operating time	> 200 hs
Energy resolution	< 0.1 meV

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