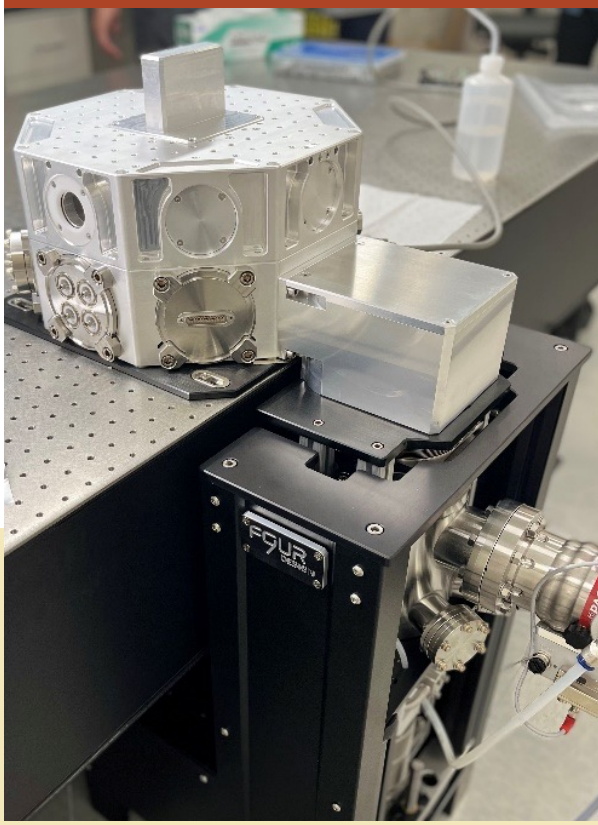
FOUR9 DESIGN

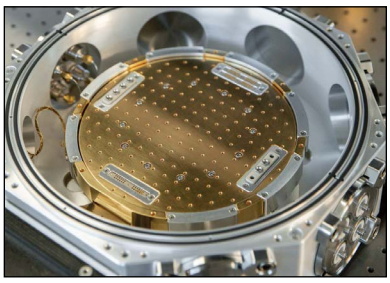
Innovative Cryogenic System Designs for Challenging Applications

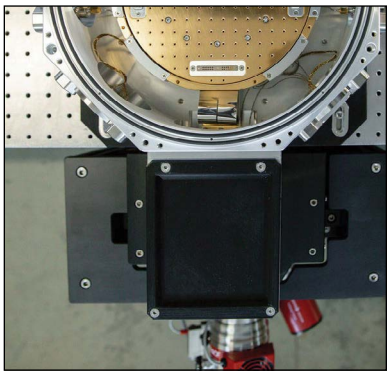
SideKick
UHV Low Vibration Optical Cryostat



The SideKick is an ultra-high vacuum, ultra-low vibration, sub 4K cryostat that removes the cryocooler clutter from your table and provides access to your experiment from all sides. The cryogenic workspace is mounted to your existing table like other optical elements. It connects with a highly flexible bellows column to the cryo-cooler and mechanical pumps, which are referenced off the lab floor to separate pump vibrations from your sample and optics. The sample space environment uses low outgassing materials only and if you choose to bake the chamber, you can expect < 1E-8 torr before cooldown and 1E-11 torr once cold.

Model	Base Temp	Cold Plate Cooling Power	Cold Plate Vibrations
SK100	<4K	100mW@5K	< 15nm
SK200	<3.6K	200mW@5K	< 25nm
SK300	<3.5K	300mW@5K	< 30nm





KEY FEATURES

- Differentially pumped vacuum seals for ultra-high vacuum performance
- Only UHV rated low outgassing materials used in cryostat construction
- Large cold platform - Ø200mm X 100mm cold space or taller typical.
- Plenty of optical access via windows or fibers. 9 windows available 8 horizontal, 1 vertical
- 24DC connections available to user included, integrated and heat sunk at 4K cold plate
- Six industry standard ISO63 panels may be used for interfacing additional RF, DC, or fiber optics.
- Integrated temperature sensors and heaters on 1st Stage, 2nd Stage, cold plate, and radiation shield/sample
- Integrated turbo pump, roughing pump, and full-scale pressure gauge.
- Floor mounted vibration isolation pillar at optical table edge. Accommodates table thicknesses of 12-37”

OPTIONS

Bakeout: Integrated bakeout hardware including heaters and controller. Pressure (before cooldown, after bakeout): < 1E-8 torr.

Side Port Connections: (All thermally heat sunk at 40K and 4K)

- 24 DC user connections using D-sub style feedthroughs
- 4x RF Cables, 20 GHz stainless steel, semi-rigid coaxial lines. Floating SMA feedthrough on outside, SMP at 4K
- 2x Fiber Optic Feedthrough - FC or compression style
- Gas tube assembly: for introducing a controlled gas directly into sample environment

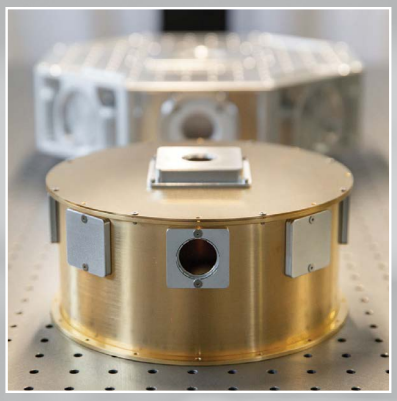
Kimball spherical octagon housing with 8x 2.75” CF radial ports. Ideal for high NA applications

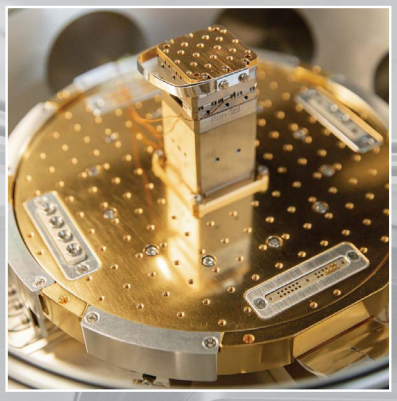
User controlled sample mount: Includes closed-loop heater and thermometer (Cernox) control. Thermally connected with passive thermal switch for quick temperature changes and low position drift between 4-350K.

4K Shield: Allows lowest vacuum applications

Low vibration insert for SPM: For 0.1nm PTP relative motion

250mm cold plate: Larger cold space allows 8 interface patch panels at the cold plate surface. These panels may be for RF, low voltage (DC), or high current (for magnet options) connections





ABOUT US

Four Nine Design makes robust cryogenic products to accelerate research and scientific achievement in the emerging quantum market. We can customize these solutions to meet unique requirements of our users. Our mission is to use our skills, resources, and capabilities to have a positive impact on the world.