OptiCool® Positioning and Microscopy

Integrated Nanopositioners

Many optical applications require precise positioning of the sample to the optical path for focusing or examination of an area of interest. The ability to scan the sample is also required for 2D imaging of sample properties. To meet these needs the OptiCool cryostat can be configured with a piezo-based nanopositioning stack to move your sample in situ. The stack shown consists of X, Y, and Z stages, all with resistive feedback, to give you full motion control and knowledge of your sample position. The nanopositioner option comes with all the adapters needed to mount the nanopositioners onto a pod, specialized cryostat wiring, and cabling that can connect to the piezo controller.

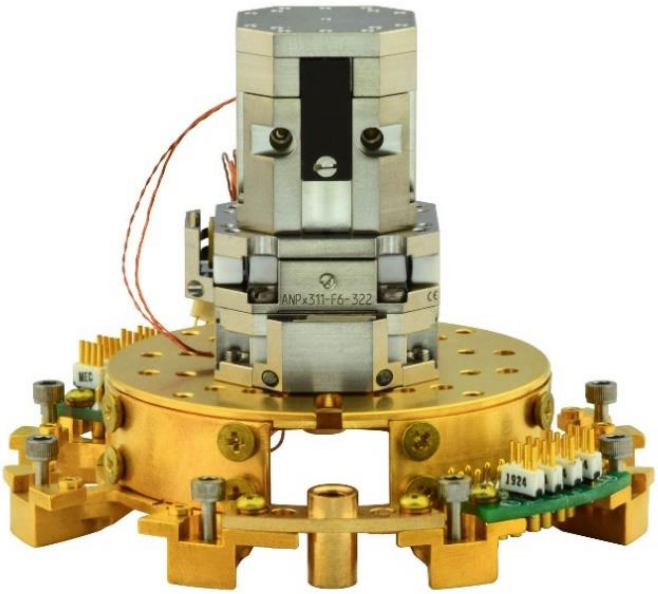


Image shows attocube ANPx311 positioners and ANPz102 positioner with resistive feedback. Positioners are shown mounted on a standard OptiCool pod.

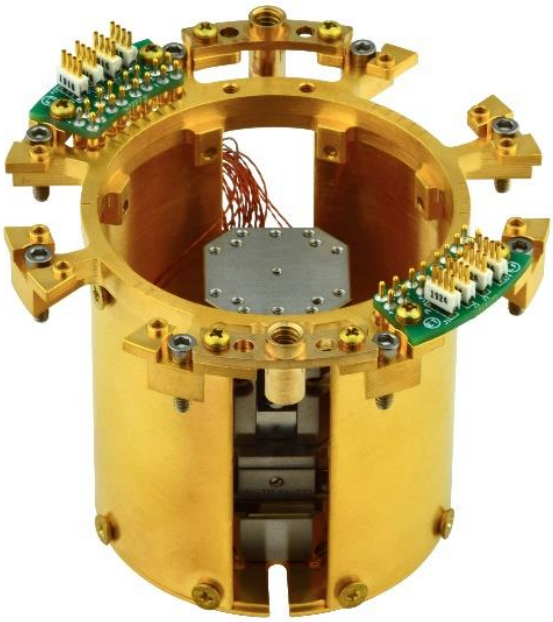


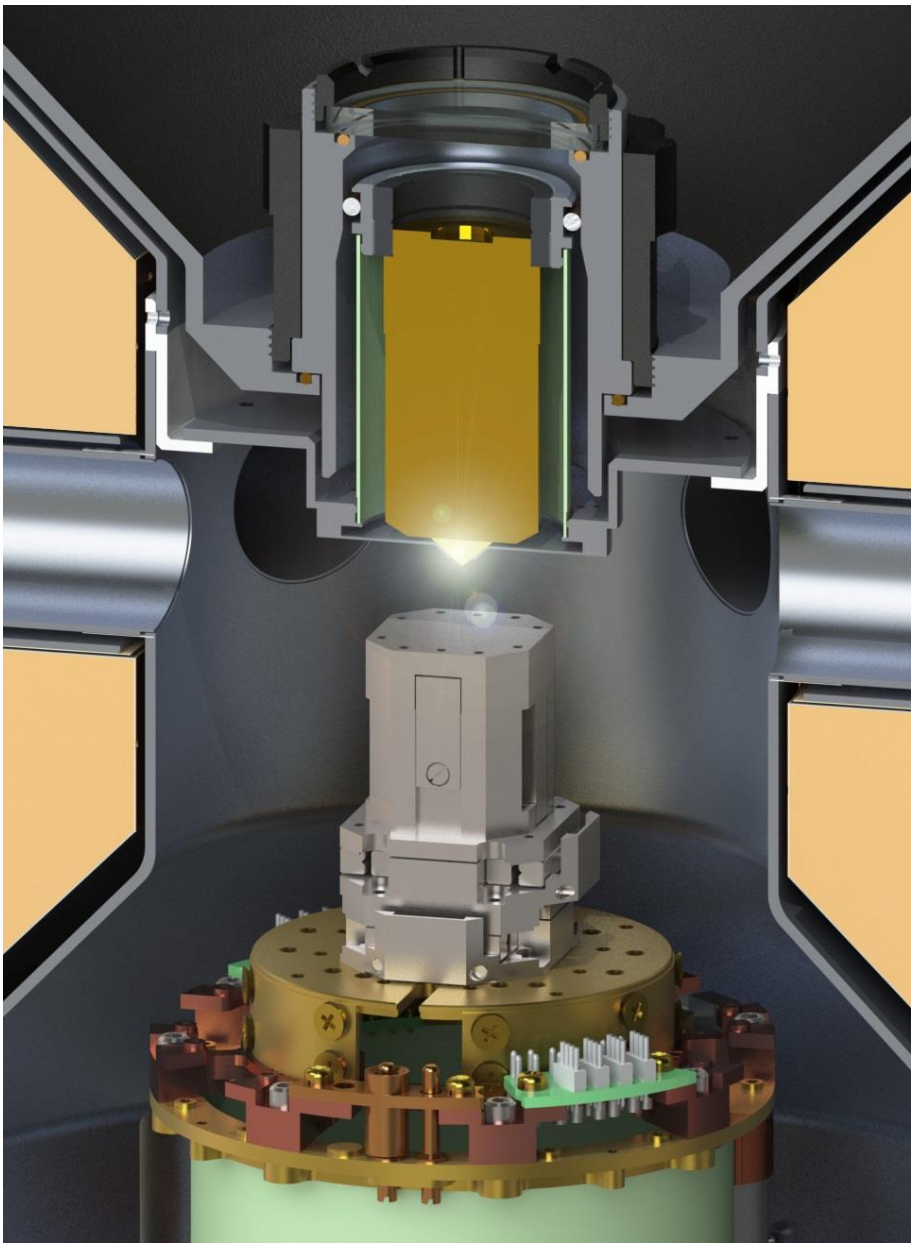
Image shows the attocube nanopositioner stack mounted on an OptiCool large-volume pod to position it lower in the sample space.

A copper thermal stage can also be added to the top of the stack. Flexible straps are utilized to cool the stage and sample. An auxiliary thermometer and associated electronics are included with the OptiCool. The thermometer can be mounted to the stage to get an accurate measurement of the sample temperature. The thermometer uses built in cryostat wiring, leaving sample wires free for experimental use.

The nanopositioner stack can be mounted on the standard pod (pictured above) or on the large-volume pod (pictured at left) depending on experimental needs.

Microscope Objective

Many experiments require a high-quality, high-NA objective. To address this need, Quantum Design offers a field-compatible Zeiss 100x LD EC Epiplan-Neofluar, infinity-corrected objective. With a 0.75 NA and a free working distance of 2 mm between your sample and the cold shield aperture, this system offers capable optics with plenty of free space above your sample for convenient mounting. The optics are maintained in vacuum at room temperature to provide the optimal environment to take full advantage of this objective's high performance design.



A rendering showing the Zeiss objective and nanopositioners in a cross sectioned view of the OptiCool sample volume.