

Closed-cycle Cryostat Quick View

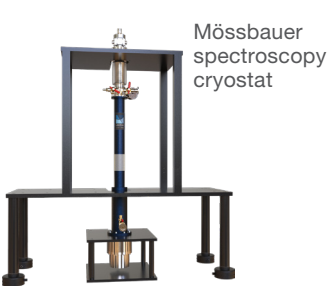
CCS-100 <4 K to 325 K



CCS-XG <4 K to 325 K



CCS-800 <4.5 K to 300 K

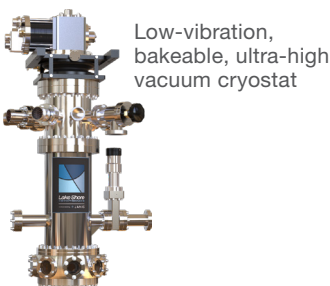


 = Sample-in-vacuum
 = Sample-in-exchange-gas

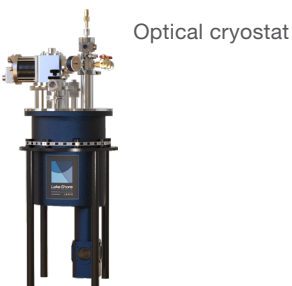
CCS-300S <4 K to 325 K



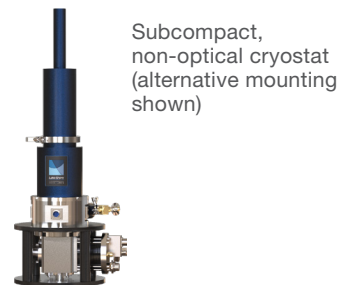
CCS-XG-UHV <4 K to 325 K



CCS-900 <4 K to 800 K



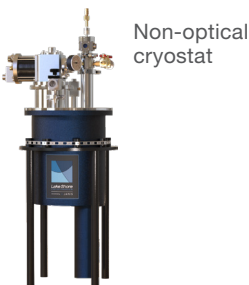
CCS-300ST <4 K to 325 K



CCS-TRAP/-S <5 K to 500 K
CCS-TRAP-CORE



CCS-900T <4 K to 800 K



CCS-400 <4 K to 500 K

Optical, high-temperature (500 K) cryostat

CCS-400H <5 K to 800 K

Optical, high-temperature (800 K) cryostat

SHI-950-LT 1.5 K to 800 K

Low-temperature optical cryostat

SHI-950T-LT 1.5 K to 800 K



Closed-cycle Cryostat Applications

Sample environment

Sample type = all (non-conductive, conductive, solid, liquid, powder)

Sample type = only conductive, solid

Rotatable sample

Maximum temperature >325 K

Fast and easy sample change <10 min

Low vibration 40 nm

UHV

Typical applications

Mössbauer

Optoelectronics

Magnetotransport

Noble gas or ice core trapping

Electrical transport

Quantum computing

		✓							✓		✓
CCS-100	Vacuum	✓							✓		✓
CCS-300S		✓							✓	✓	✓
CCS-300ST		✓								✓	✓
CCS-400		✓		✓					✓		✓
CCS-400H		✓		✓					✓		✓
CCS-XG		✓				✓			✓		✓
CCS-XG-UHV		✓				✓	✓				✓
CCS-TRAP/-S/-CORE	Exchange gas			✓						✓	
CCS-800		✓	✓		✓			✓			
CCS-900		✓	✓	✓	✓			✓			✓
CCS-900T		✓	✓	✓	✓						✓
SHI-950-LT		✓	✓	✓	✓			✓			✓
SHI-950T-LT		✓	✓	✓	✓					✓	✓

Typical applications

Mössbauer spectroscopy studies low energy gamma rays emitted and absorbed to understand the properties of a solid materials nuclear structure. A Mössbauer spectrometer attaches to the cryostat to excite and take measurements of the material being studied.

Optoelectronics studies electronic devices that interact with light, such as light-emitting diodes (LEDs), solar cells, and photodetectors. These optical components are cooled to reduce thermal noise and increase sensitivity to observe the components' interaction between light and electrical signals. This is especially important in low-light applications, where even small amounts of noise can affect the measurement accuracy.

Magnetotransport studies materials in the presence of a magnetic field. The transport properties of charge carriers, such as their mobility and concentration, can be investigated using techniques such as magnetoresistance and Hall measurements.

Noble gas trapping refers to the adsorption of noble gases, including helium, neon, argon, krypton and xenon. Extraction of such gases from geological materials collected from volcanic hot springs provides insight into Earth's planetary evolution.

Ice core trapping involves extracting cylindrical samples, or "cores," from ice sheets or glaciers. These cores contain trapped air bubbles and other substances that provide valuable information about past climate conditions.

Electrical transport is a technique used to study the electrical properties of materials. This can include measurements of electrical resistance, conductivity, and other properties that are important for understanding the behavior of materials in various electronic and magnetic devices.

Some approaches to **quantum computing** require cryogenic temperatures. A UHV sample environment is needed for ion trap devices, as is extremely low vibration. With other approaches, fast sample exchange is useful for pre-screening devices.