

# Elsa Cryo-Transfer Holder

## Model 698

The Elsa™ cryo-transfer holder is a next generation, a single-tilt liquid nitrogen holder designed for the frost-free transfer of a sample at liquid nitrogen temperature into a transmission electron microscope (TEM). This holder is primarily used for imaging radiation-sensitive, frozen-hydrated specimens for single particle cryo-electron microscopy (cryo-EM).

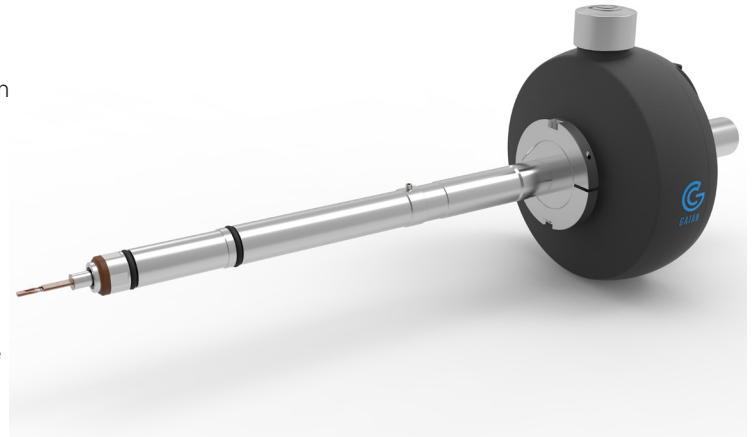
### Benefits

- **Larger dewar, redesigned from the ground up:** Increases the liquid nitrogen volume by 2.5x
- **Extended hold time:** Allows >9 h below -145 °C and >8 h of stable, high-resolution imaging
- **<1.5 nm/min drift rate:** Ensures that image quality is high during data collection
- **Resolve <2.3 Å features:** Enables high-resolution imaging even under cryo-conditions
- **Centrosymmetric design:** Reduces settling and drift, during tomography, by maintaining the center of gravity during a stage tilt

This holder comes with two different tip configurations. The ultra-low profile uses the Gatan Quickload™ clipping-free mechanism to secure the specimen and provide the highest tilt range of any side entry cryo-transfer holder available today ( $\pm 80^\circ$  tilt). While the standard tip, which is often considered the easiest for novice users, uses a clipping mechanism to secure the sample.

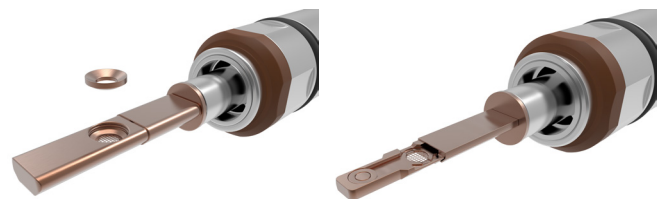
The Elsa holder is specifically designed to provide a larger liquid nitrogen reservoir, with a hold time of more than 9 h. This allows researchers to perform longer, unsupervised data collection to support overnight or more complex cryo-experiments.

In addition, the Elsa holder utilizes a high-resolution cable, so that the holder can be set to maintain a constant temperature throughout the course of an experiment without compromising performance. This helps to minimize specimen drift, reducing the time needed to wait for the stage to stabilize before one can collect an image. This high-resolution cable also enables researchers to easily resolve features at <2.3 Å resolution isotropically.



A lightweight cryo-workstation provides low-temperature specimen loading to protect the frozen-hydrated grid. A one-piece cryo-shield encapsulates the frozen-hydrated grid to provide protection against damage caused by warming and frost formation during transfer from the workstation to the electron microscope.

The centrosymmetric design makes it easier for both novice to expert cryo-electron microscopists to use. As you rotate or tilt the holder, the center of gravity is maintained reducing settling and drift during tomography experiments. As a result, novice and expert microscopists can acquire higher quality, clearer images.



**Figure 1.** Samples can be mounted on a standard profile holder (left) that uses a clipping or the ultra-low profile holder (right) that addresses high tilt applications using a clipping-free design.

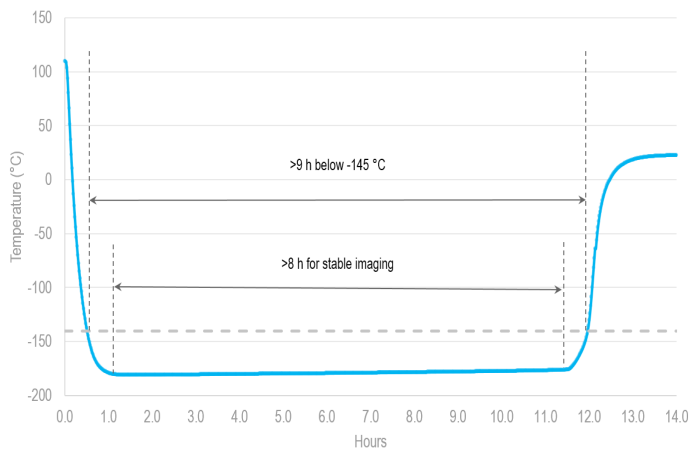
## Applications

- Cryo-EM
- Cryo-tomography
- Electron crystallography
- Nanoparticle imaging

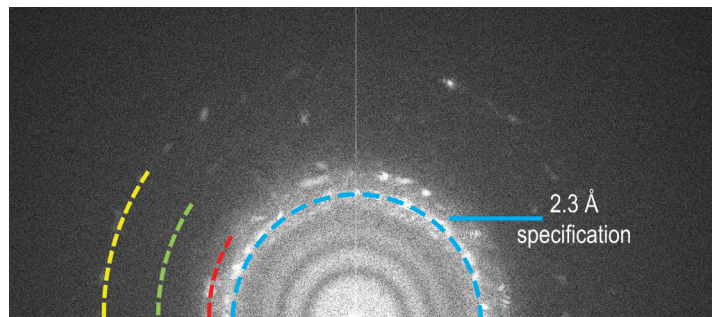
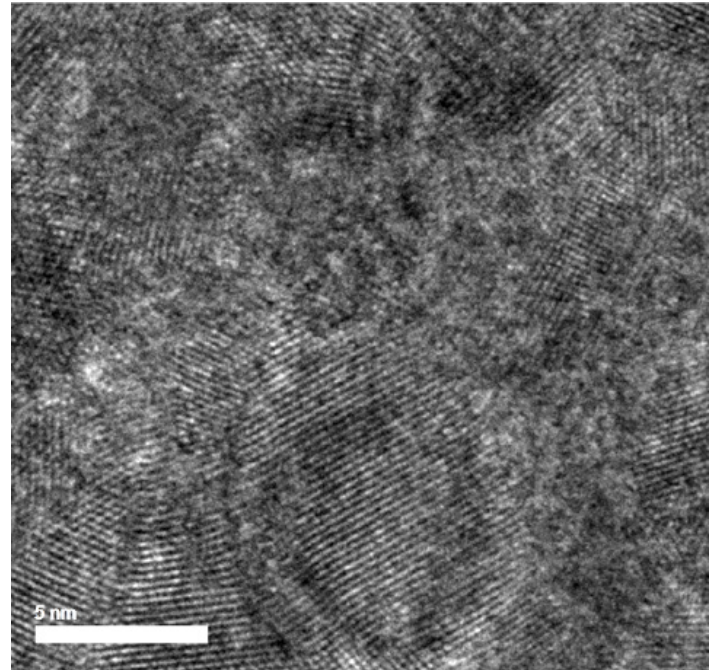
## Specifications

Drift rate at 0° tilt (nm/min)	<1.5
Isotropic resolution at 0° tilt (Å)	2.3
Observable area at 0° tilt (mm <sup>2</sup> )	4.1
Standard specimen cup/holder tip material	Beryllium copper
Capacity	
Diameter (mm)	3
Max. grid thickness (µm)	300
Cryogen	Liquid nitrogen
Operating temperature (°C)	Less than -170
Time to reach min. operating temperature (min)	<40
Dewar capacity (mL)	250
Time to resolution specifications (min)	60 – 90
Hold time for high resolution (h)	>8
Hold time below -145 °C (h)	>9

Specifications provided herein are approximate and are intended only as guidelines. Drift rate and high-resolution performance are dependent upon ambient conditions and installation of the TEM pursuant to the manufacturer's specifications. Specifications are subject to change without notice.



**Figure 2.** The Elsa cryo-transfer holder allows you to double your experiment time: >9 h below -145 °C with >8 h of stable imaging.



**Figure 3.** A high-resolution image of gold lattice at cryo-temperatures using the Elsa cryo-transfer holder (top). The holder shows excellent resolution and drift that allows high-resolution features (blue 2.3 Å, red 2.0 Å, green 1.45 Å, yellow 1.2 Å) to be readily visible (bottom).

## Ordering

Model	Description
698.STP	Elsa Cryo-Transfer Holder (Standard Profile, Workstation, Temperature Controller)
698.ULP	Elsa Cryo-Transfer Holder (Ultra-Low Profile, Workstation, Temperature Controller)
1905	Temperature Controller, Model 1905

## Other products to consider

- K3™ and K2® direct detection cameras
- GIF Quantum® LS imaging filter
- Latitude® S low-dose automation software
- Cryoplunge® 3 system
- Turbo pumping station