

GATAN-CT3500-Cryotransfer

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Specifications**CT3500 Cryotrans**

Single tilt ultra high resolution nitrogen cooling holder with cold shutter.
 Resolution 0.34 nm or better, depending on TEM specification.
 Maximum tilt angle depends on TEM/polepiece specification.
 LN2 dewar capacity : 140 ml
 LN2 holdtime typically 3.5 hrs
 Temperature range < -170°C to +50°C
 Holder fitted with screwed insert, heater, temperature sensor, dewar pump out fitting (regular evacuation by high vacuum system is recommended) and sorb plus sorb heater.
 System includes cryo-workstation and tools, portable grid holder for frozen specimens, tip protection sleeve with pump out fitting and pump out tool, digital temperature controller.

Options

BSI, beryllium sample insert, for microanalysis
 CT3501, 2nd nitrogen cooling holder for use with CT3500 system.
 Gas shield device, for protection of holder tip against frosting (generally only required for very humid environments).
 High vacuum dry pumping system, for pumping dewar vacuum or tip protection sleeve.
 TAC 100, retractable, 2-bladed (or tubular) anti-contaminator, for high resolution cryo imaging.
 Cryoplunge, pneumatically controlled cryo-fixation device.
 CHVT 3007 vacuum transfer cryo-holder (see separate brochure).

Important

Other Gatan cryotransfer systems are also available e.g. for ultra high tilt applications or multi-specimen loading (see separate brochures).
 For cryo-SEM the ALTO range of cryotransfer systems is available (see separate brochure).



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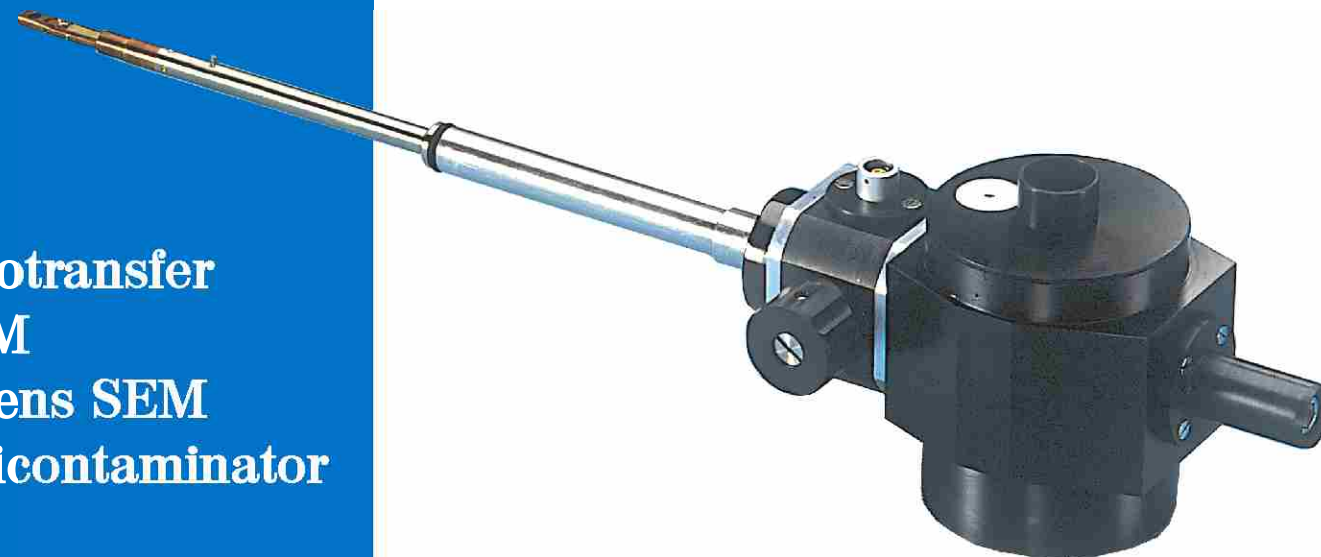
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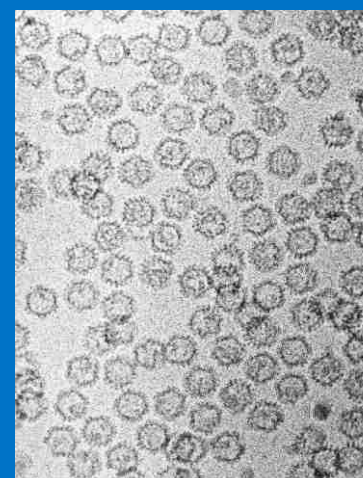
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Cryotransfer TEM in-lens SEM anticontaminator



CT3500 Cryotrans

**Cryotransfer for TEM**

Cryotransfer is now a well-established technique allowing imaging of biological macromolecules in a fully hydrated state. Current research is focusing on proteins and virus particles, including tomography studies using 3-dimensional reconstruction techniques.

For the many proteins which cannot be crystallised, cryo-TEM provides the only method for such high resolution studies, enabling understanding of the protein structure. Cryo-TEM also provides a tool for other pharmaceutical or bio-medical research, studies of liposomes, polymer suspensions and frozen sections.

Sensitive specimens are stabilised at low temperatures, allowing longer exposure to the electron beam for effective imaging and microanalysis.



Cryotransfer system for TEM and in-lens SEM 2-blade anticontaminator

CT3500 Cryotrans

CT 3500

CT3500 Cryotrans is a complete cryotransfer system for TEM, including an ultra high resolution, nitrogen cryo-holder, a cryo workstation and a digital temperature controller.

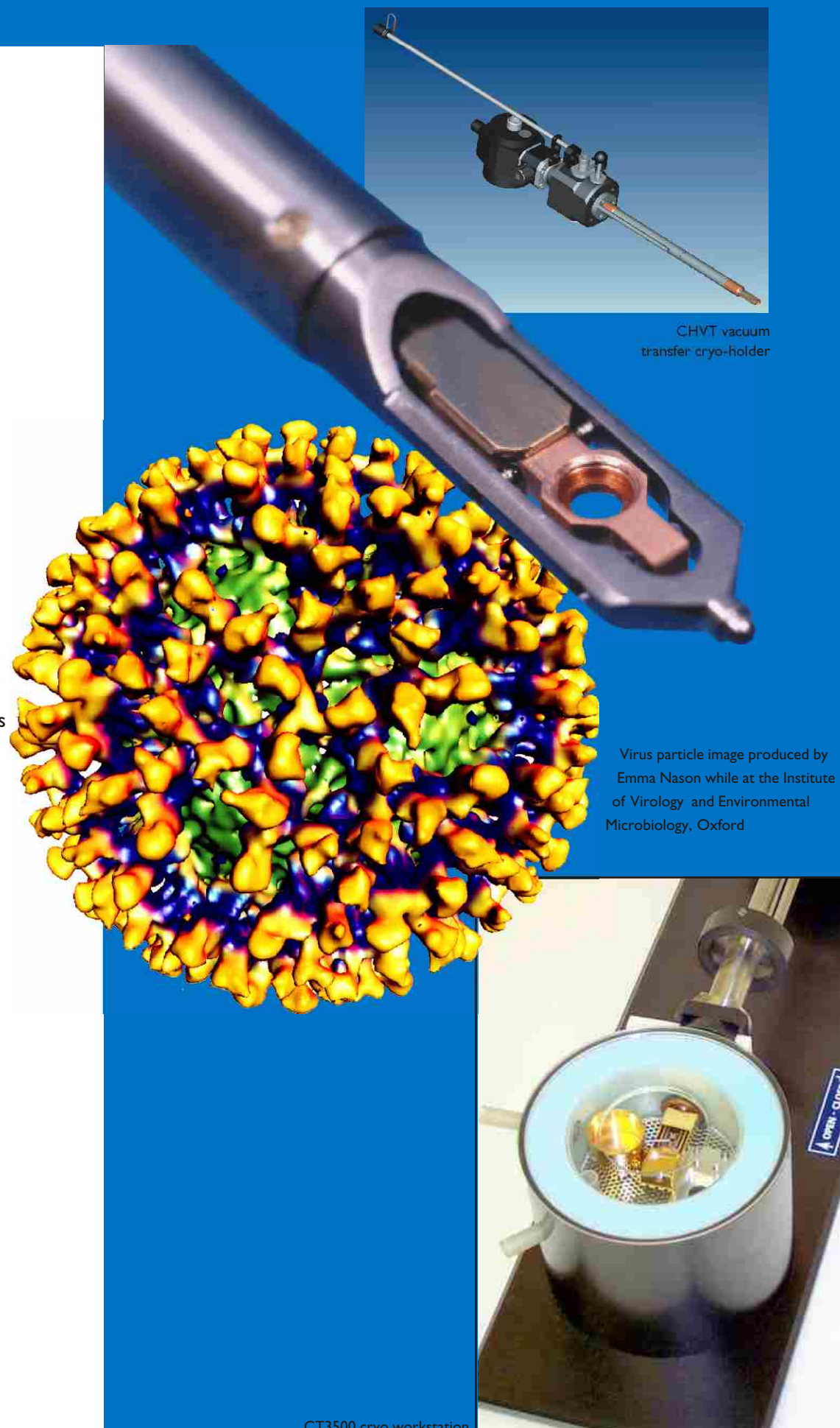
The cryo-holder has established a reputation for excellent cryogenic performance and stability, allowing high resolution studies and long nitrogen hold times, even at high tilt angles. The design is lightweight and ensures that the small volume of liquid nitrogen does not boil, avoiding the introduction of vibration.

The specimen insert is thermally isolated from the holder tip allowing rapid cooldown and highest stability. A cooled shutter is included, to protect the specimen from frost contamination during transfer to the TEM.

Specimen loading into the cryo-holder is made straightforward and reliable using the latest design of cryo workstation. This provides the dual advantages of easy manipulation of the specimen in cold nitrogen vapour while maintaining minimum temperatures during grid storage and at the cryo-holder insert by using small reservoirs and a drip feed of liquid nitrogen. Vitreous ice conditions are maintained and contamination is avoided.

Quick, positive specimen clamping is achieved using a screwed clamp ring and special tool provided.

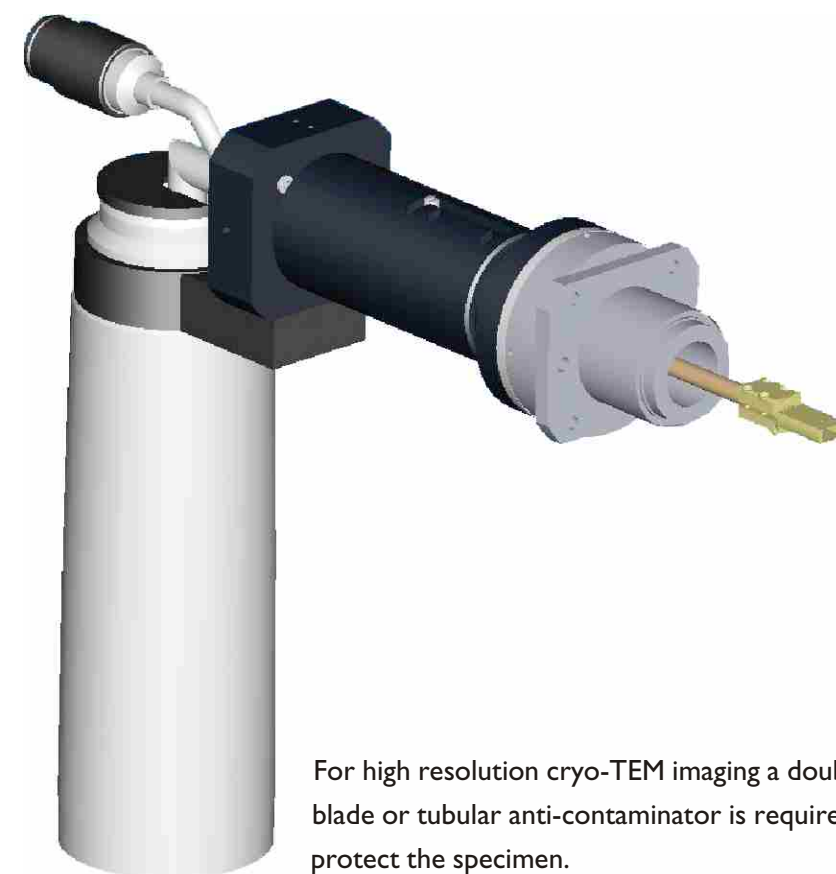
CT3500 is available for nearly all TEMs and in-lens SEMs and special versions can be provided for bulk specimens and vacuum transfer e.g. allowing interfacing to high vacuum coating systems. Special cryo-holders are also available with helium cooling, cartridge loading or sample rotation.



CHVT vacuum
transfer cryo-holder

Virus particle image produced by
Emma Nason while at the Institute
of Virology and Environmental
Microbiology, Oxford

CT3500 cryo workstation



For high resolution cryo-TEM imaging a double-blade or tubular anti-contaminator is required to protect the specimen.

TAC 100 is a highly efficient, retractable anti-contaminator that can either be fitted to a side port on the TEM column (2-bladed design) or opposite the goniometer (tubular design).

As options, CT3500 can be fitted with a beryllium insert and TAC 100 can be fitted with beryllium blades to allow optimum microanalysis.

Preparation of specimens for cryo-TEM involves rapid 'cryo fixation' to achieve a vitreous ice suspension. This is typically performed by plunging a thin film on a support grid into liquid ethane.

Cryoplunge is a pneumatically controlled plunge freezing device with a timed blotter to achieve reproducible vitreous thin films (see separate brochure).



Cryoplunge