



Quorum Technologies  
www.quorumtech.com



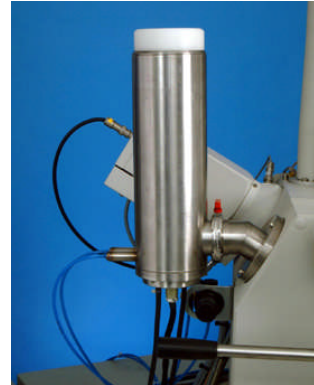
## **New option: CHE2000 12 litre capacity SEM cooling dewar.**

### **What is it for?**

The CHE2000 is an option for the PP2000 and PP2000T models of cryo-SEM. It can replace the standard SEM column mounted dewar and has a number of significant advantages.

### **The standard dewar - currently supplied with the PP2000 / PP2000T**

The standard dewar (image right) is liquid nitrogen filled incorporates a heat exchange unit which pre-cools nitrogen gas, which in turn cools the PP2000 / PP2000T stage and cold trap to temperatures as low as  $-192^{\circ}\text{C}$  (normally higher temperatures are selected).



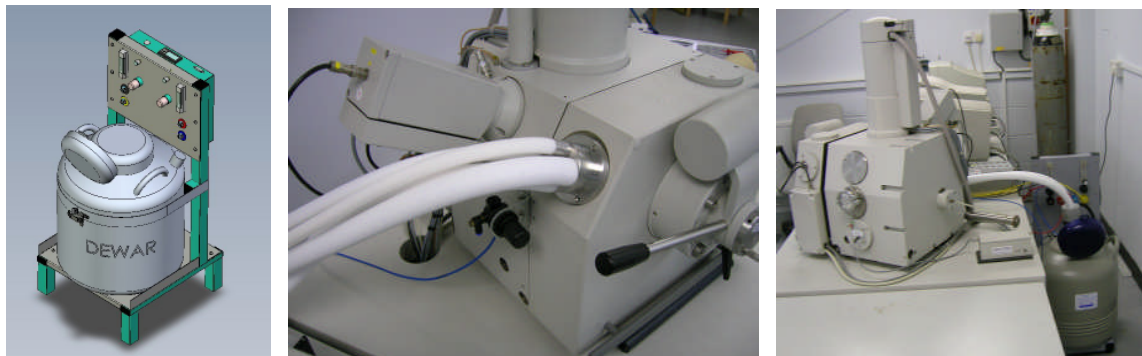
Please note that a separate source of nitrogen gas (cylinder or boil-off gas from a pressurised nitrogen cylinder – PP7450 option – is needed). Liquid nitrogen cannot be directly passed through the SEM stage as boiling nitrogen would cause unacceptable levels of vibration.

The standard SEM cooling dewar (it cools the SEM stage and SEM cold trap) is fitted directly to the SEM chamber.

Although column mounted dewar is very efficient because the wall of the dewar is actively pumped by the SEM pumping system, it's capacity is small (0.6 litre) and therefore only offers a typical run time between fills of around 40 minutes. This can be frustrating for some customers and limiting for some cryo applications (e.g. unattended operation).

Also on very "busy" SEMs there is often a shortage of space to fit this dewar – there maybe a free SEM port, but no space above for the dewar.

## CHE2000 CHE2000 12 litre capacity SEM cooling dewar



### Features and advantages:

- 12 litre capacity – allows run times (between topping up the dewar) of over 8 hours.
- Highly efficient insulation between the dewar and the SEM – ensures low stage and cold trap temperatures can be achieved. Excellent thermal stability.
- Off-column design means it is easier to fit to “busy” SEMs that may not otherwise allow an on-column dewar to be fitted.
- The CHE2000 has a built in pre-cooling unit. This allows a lower purity nitrogen gas supply to be used – for example, piped in wall / service gas. The standard on-column dewar needs high purity gas.

### Installation issues

Typically the CHE2000 needs to be seated behind the SEM (see right hand image above) and is connected to the SEM through 1m tubes. Access is needed to the dewar for filling.

### Offering the CHE2000 with a new PP2000 / PP2000T

When quoted with a full PP2000 / PP2000T system the on-column dewar is NOT supplied. The CHE2000 price is adjusted to reflect this.

### Retrofitting the CHE2000 to an existing PP2000 / PP2000T

This is possible, but a Quorum engineer or trained engineer from a Quorum distributor will need to fit the CHE2000. Normally Quorum cannot part exchange the on-column dewar for the CHE2000.

July 2008