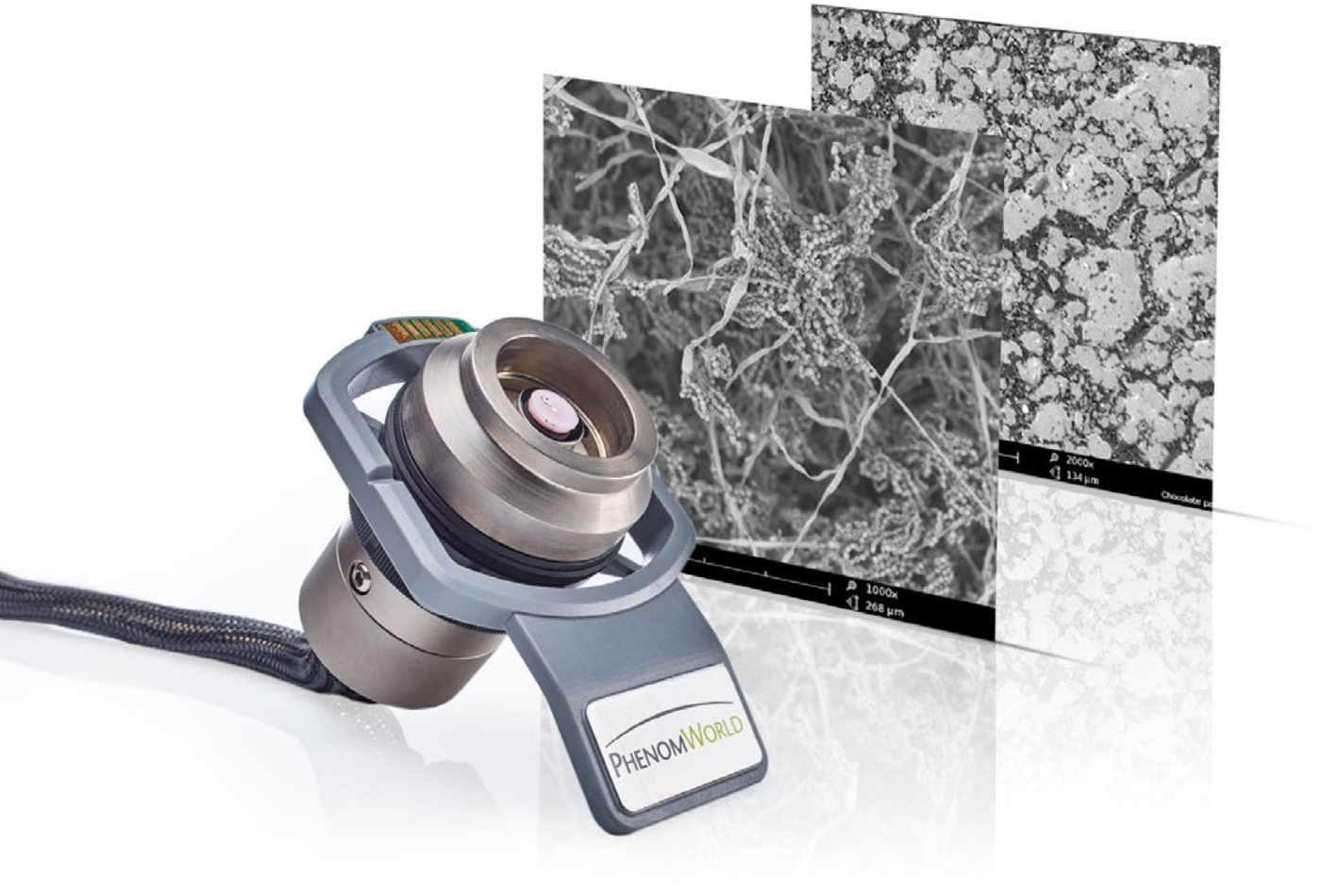
Phenom Temperature Controlled Sample Holder

The sample structure will keep its natural structure



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Phenom-World has developed, together with its preferred development partner Deben, a Temperature Controlled Sample Holder to study vacuum-sensitive and vulnerable samples. The Thermo Scientific™ Phenom Temperature Controlled Sample Holder is able to control the temperature by cooling or heating the sample and therefore influence the humidity around it. This minimizes the charging effect of the electron beam and vacuum damage to the sample.

The Temperature Controlled Sample Holder is based on the Peltier principle and designed in a way that the temperature can be adjusted quickly and easily. The sample temperature is accurately monitored and controlled by a dedicated keypad controller. The temperature of the Temperature Controlled Sample Holder can be controlled from -25°C to +50°C, with an accuracy of ±1.5°C. The temperature can be changed at a rate of max 20°C per minute, depending on the sample mass. The Temperature Controlled Sample Holder is water cooled for excellent temperature stability by a self contained closed-loop water chiller box.

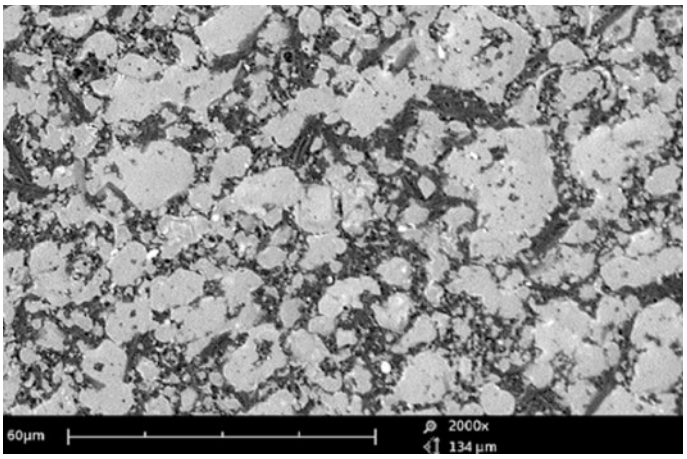
The low vacuum inside the Temperature Controlled Sample Holder, combined with a temperature of -25°C, keeps the relative humidity at a constant high level. This results in slowing down water evaporation significantly and prolonging viewing time before specimen degeneration.

The interface shows the set and actual temperature. The Temperature Controlled Sample Holder can be retrofitted to all versions of the Phenom desktop scanning electron microscope (SEM).

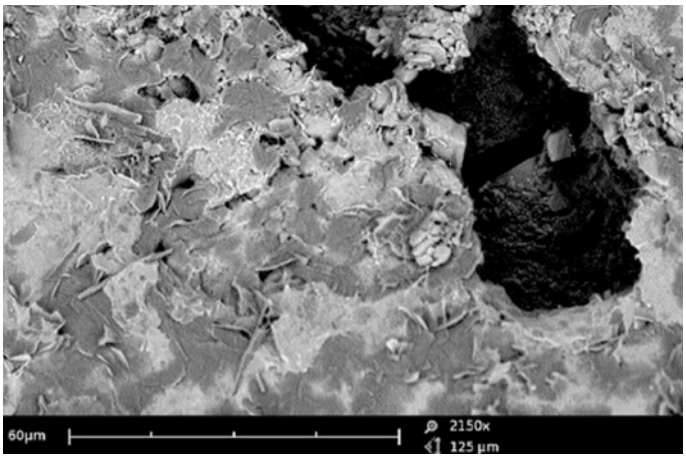
Benefits of the Phenom Temperature Controlled Sample Holder:

- The sample structure will keep its natural structure as less water will evaporate.
- Longer viewing time of biological and organic samples, without noticeable vacuum artifacts.
- Reduced beam damage.

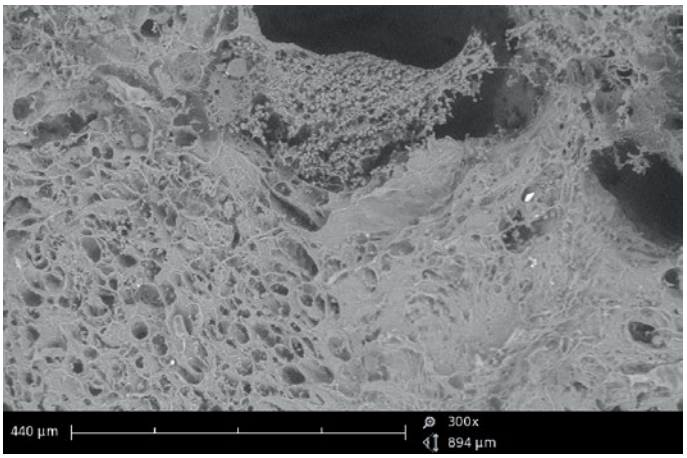
Specifications	
Temperature range	
-25°C to +50°C	
Temperature control	
Keypad with simultaneous display of set and actual temperature	
Temp. accuracy	
±1.5°C	
Temperature display	
Resolution 0.1°C	
Maximum cooling rate	
20°C/min	
Max. distance to cooling unit	
1.2 m	
Sample size	
25 mm (ø) x 5 mm (h)	
Sample vacuum level	
Charge reduction mode	
Dimensions and weight	
Chiller unit	300(w) x 310(d) x 340(h) mm, 15 kg
Sample holder	60(w) x 100(d) x 70(h) mm, 0.8 kg
Power	
160 W	



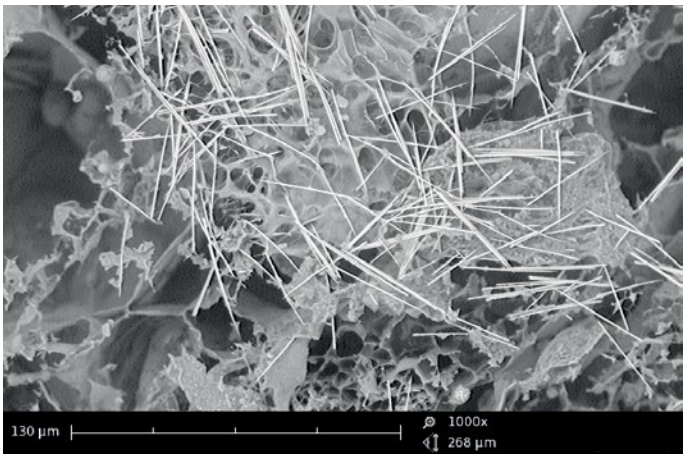
Fat distribution in chocolate paste at -25°C



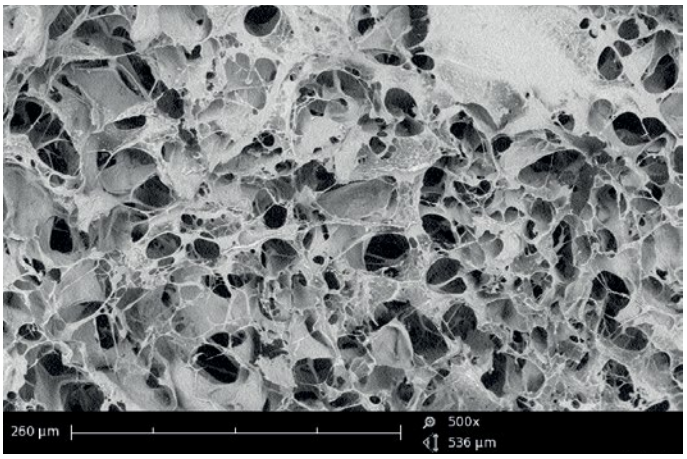
Surface of mint at -25°C. The crystals of the material can now be clearly seen



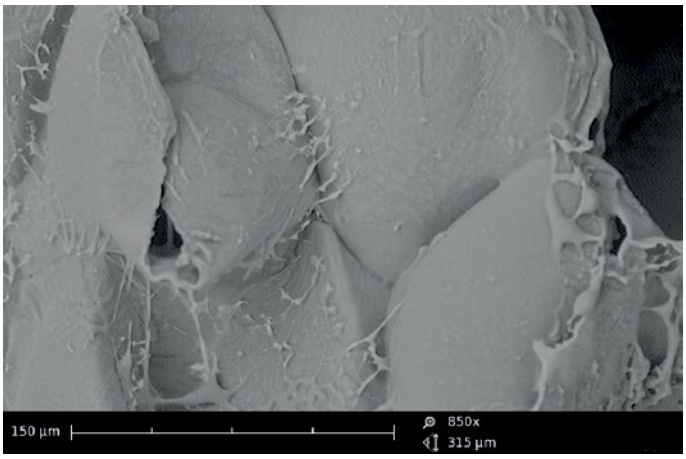
Human lung tissue at -25°C



Grape at -25°C



Tomato at -25°C



Cider apple at -25°C

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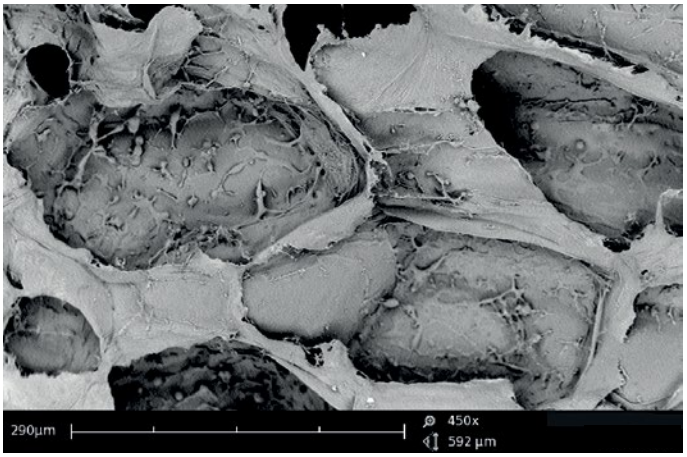
Imaging wet samples

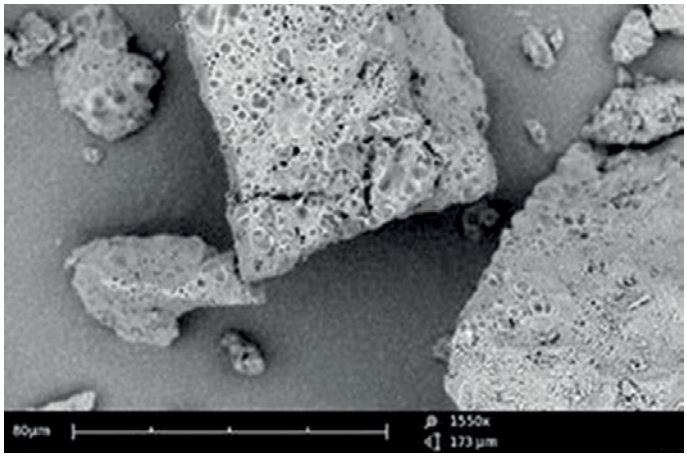
Imaging wet and moisturous samples by freezing it to -25°C, preserving the original structure of the sample.



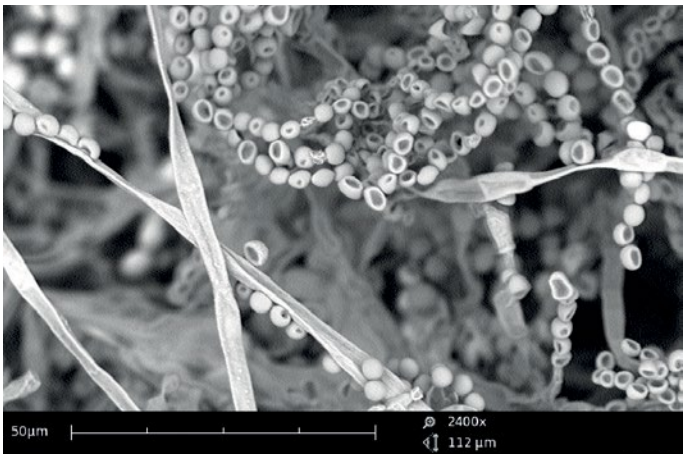
Cucumber at -25°C

Imaging beam sensitive samples

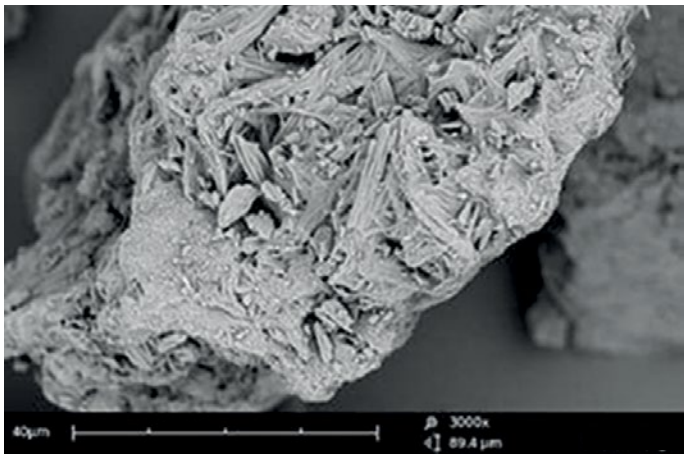
Imaging wet and moisturous samples by freezing it to -25°C, preserving the original structure of the sample.



Without cooling the sample will start to melt from 1,500x magnification onwards. Cristals will desolve, and the original structure of the sample is lost.



Mold (cheese) at -25°C



With cooling the sample can be imaged at higher magnification. The cristal structure of the sample can be well observed.

Find out more at **thermofisher.com/phenomworld**

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