

# EVO® XVP® Coolstage

## Introduction

The EVO® series of scanning electron microscopes has introduced the XVP® concept for optimum imaging of non conducting specimens. One important aspect of XVP® is the ability to study the interaction of liquid water with materials and to maintain the structure of fauna and flora by preventing dehydration. In order to image liquid water it is useful to cool the specimen to just above 0°C so that the water vapour pressure in the microscope is minimised. A Peltier couple integrated into a dovetail mounted coolstage head achieves this cooling.

The new EVO® XVP® Coolstage design builds upon in-depth experience with wet specimen analysis to deliver class leading coolstage performance.

The Coolstage can also heat the specimen stub to 50°C to study the melting of low temperature materials.

## Applications

### Materials

- Water action on cement, pharmaceuticals
- Water transport through fibres
- Low melting point materials eg chocolate
- High vapour pressure polymers
- Contact angles
- Formation of ice

### Life sciences

- Plant surfaces and internal structures
- Fauna microstructures
- Water action on seeds
- Slime studies



*EVO® XVP® Coolstage*

## Instrumentation

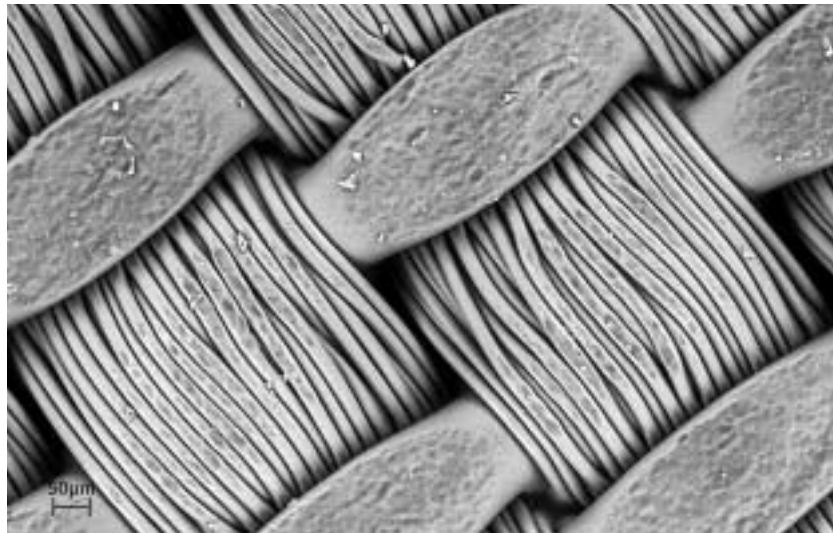
The EVO® XVP® Coolstage unit comprises an independent floor standing unit and the dovetail fitting coolstage head. The SmartSEM™ control scheme provides the user with a graphic based upon the water phase diagram to control humidity at the specimen.

Following Carl Zeiss SMT's philosophy to protect our customer's investments, the EVO® XVP® Coolstage is compatible with the installed base of EVO® series and previous 1400 series microscopes.

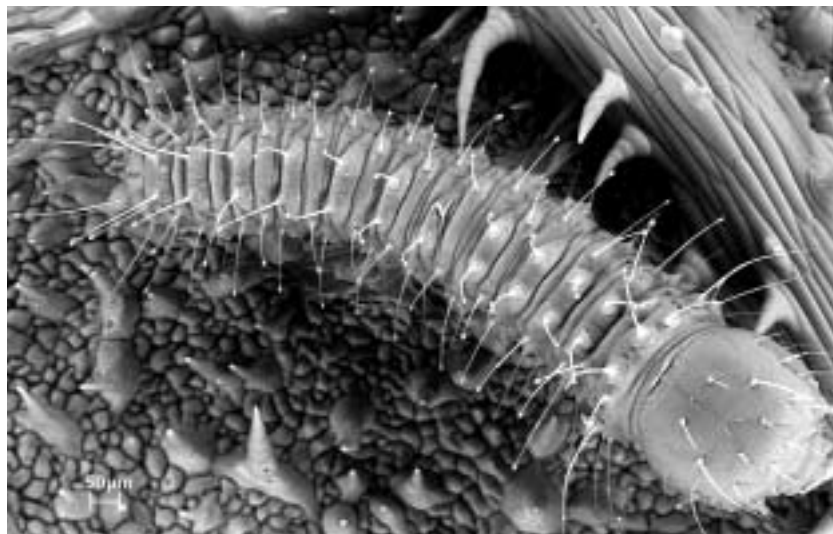


*EVO® 50*

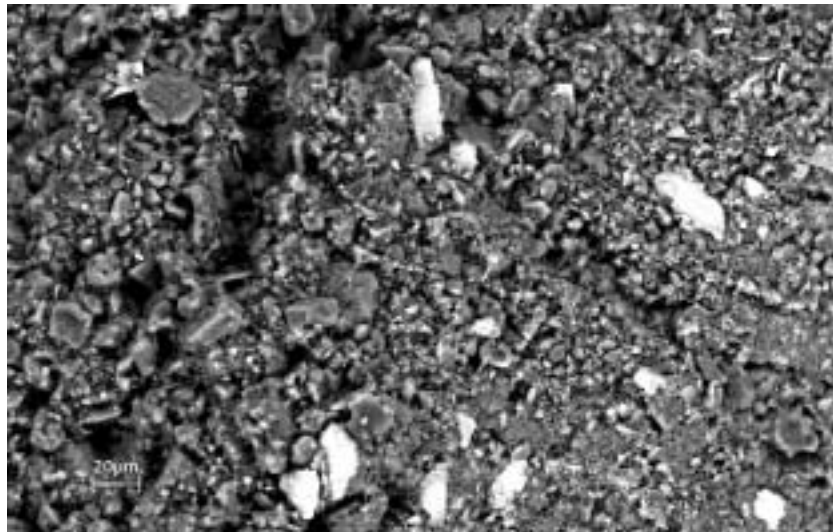
*Fig. 1:  
Textile  
(25kV, 700Pa, 1°C, air)*



*Fig. 2:  
Caterpillar  
(25kV, 15Pa, -25°C, air)*



*Fig. 3:  
Cool chocolate  
(25kV, 30 Pa, 0°C, air)*



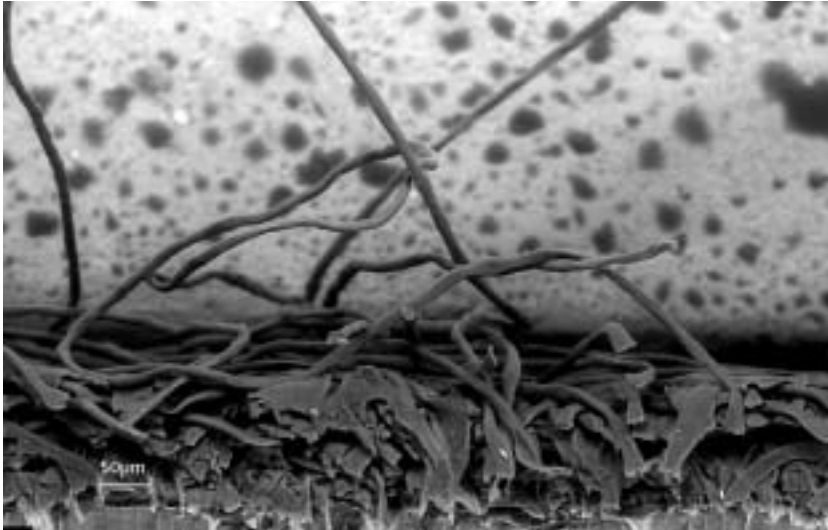


Fig. 4:  
Wet polymer micro filter  
(20kV, 700Pa, 1°C, H<sub>2</sub>O)

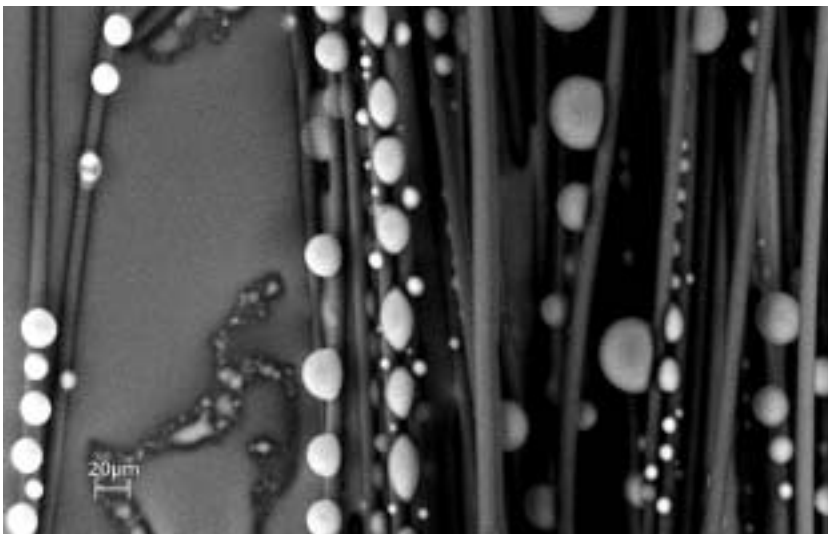


Fig. 5:  
Water saturated fibres  
(25kV, 600Pa, 2°C, H<sub>2</sub>O)

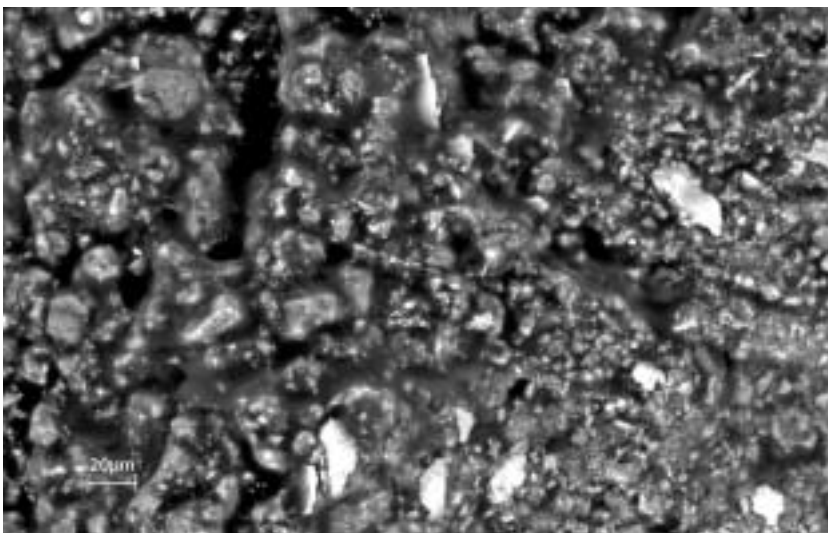


Fig. 6:  
Hot chocolate – melting started  
(25kV, 30Pa, 25°C, air)

### Global Solution Provider

The Nano Technology Systems Division of Carl Zeiss SMT provides its customers with total solutions featuring the latest leading-edge EM technology. The company's extensive know-how, meticulously acquired over 60 years in the field of E-beam technology, has brought many pioneering innovations to the market. Our global applications and service network guarantees fast, reliable and high quality support sharply focused on customer requirements. Combined with dedicated upgrade strategies, this will protect your investment for its entire lifetime. The core technology embedded in our innovative products enables us to provide solutions which add value to our customers' business.

### Enabling the Nano-Age World®



*EVO® XVP® Coolstage on cartesian specimen stage*

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