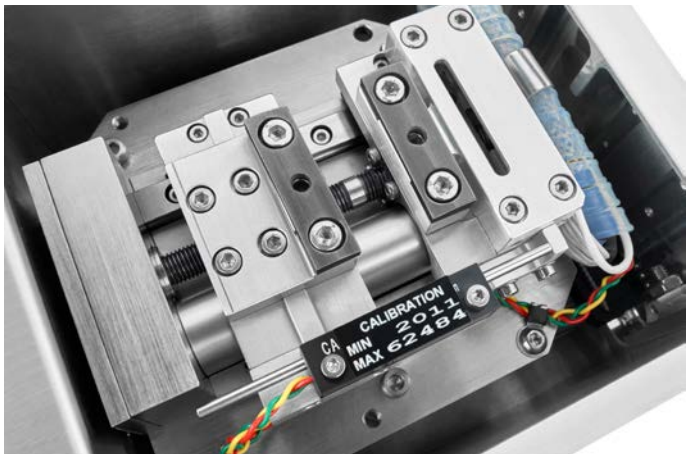
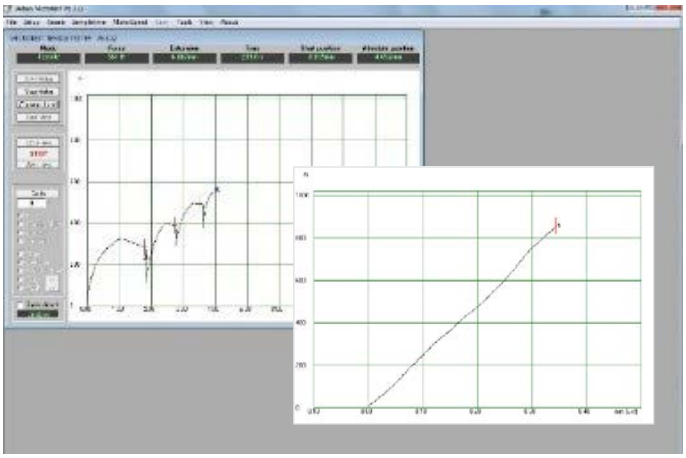
Phenom Tensile Sample Holder

Stretch and compress your samples in the Phenom XL Desktop SEM

ThermoFisher SCIENTIFIC



Close up Phenom Tensile Sample Holder



Software screenshot. The software can be installed on the ProSuite PC and is able to depict the forces measured during the experiment.

Tensile testing is a way of determining how materials will react when they are pulled apart or pushed together - when a tension force is applied. It is one of the simplest and most widely used mechanical tests. By measuring the force required to elongate a specimen to breaking point, material properties can be determined that will allow designers and quality managers to predict how materials and products will behave in their intended applications.

User benefits

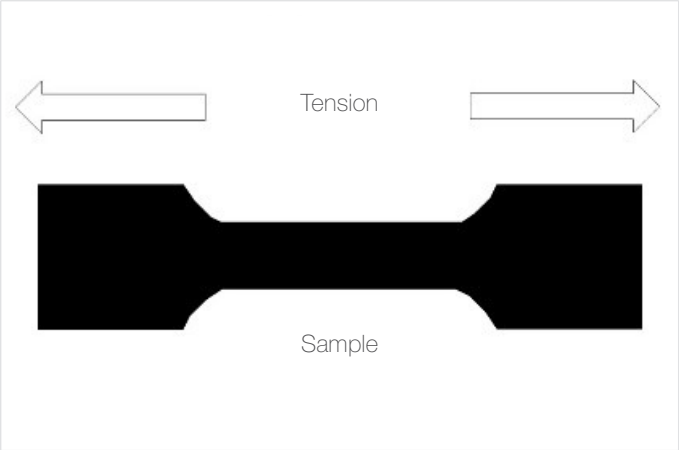
The tensile/compression stages have been designed in collaboration with Deben for use within the Phenom XL. The modules allow many different materials to be deformed and stretched at loads of up to 100Kg (1kN). The maximum load depends on the load cell fitted. There are two modules and load cells available: 150N and 1000N; the choice depends on the type of sample and the tests being carried out.

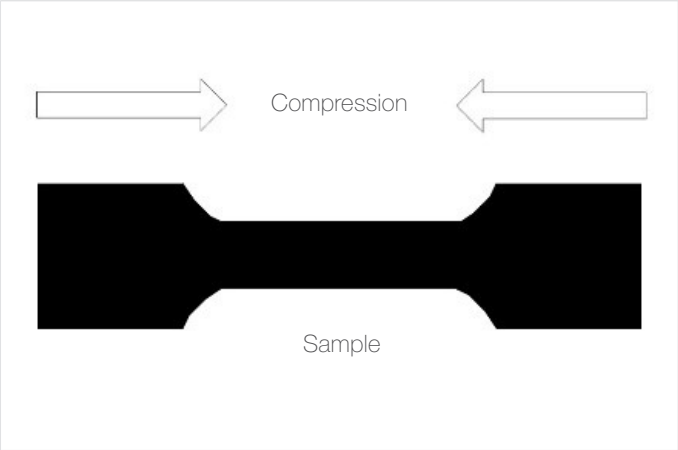
Applications are many and various. The 150N version is suitable for observing fiber clusters, polymer films, thin metal films, biological and plant material. The 1000N model is suitable for observing fiber clusters, thin metal and polymer films, biological and plant material. The standard operating range is 1.5N to 150N for the 150N model, and 10N to 1000N for the 1000N model.

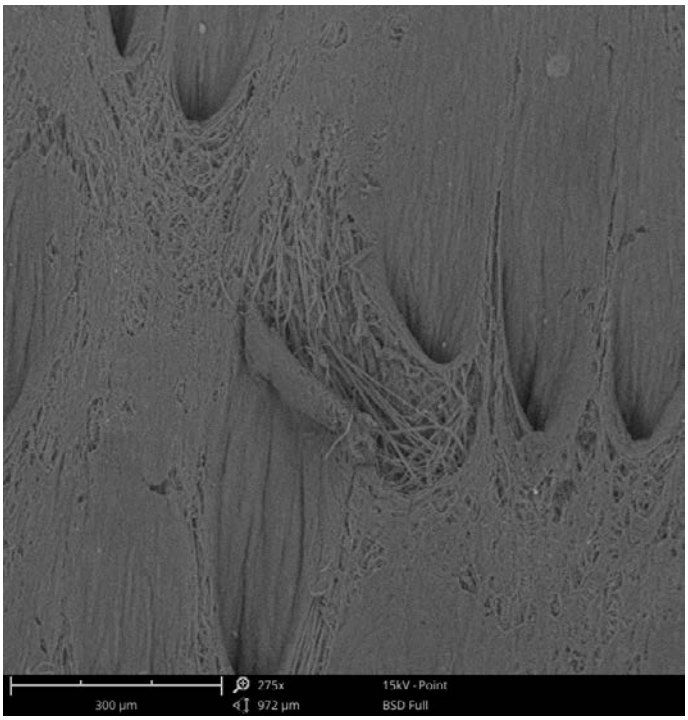
Tensile testing is used to:

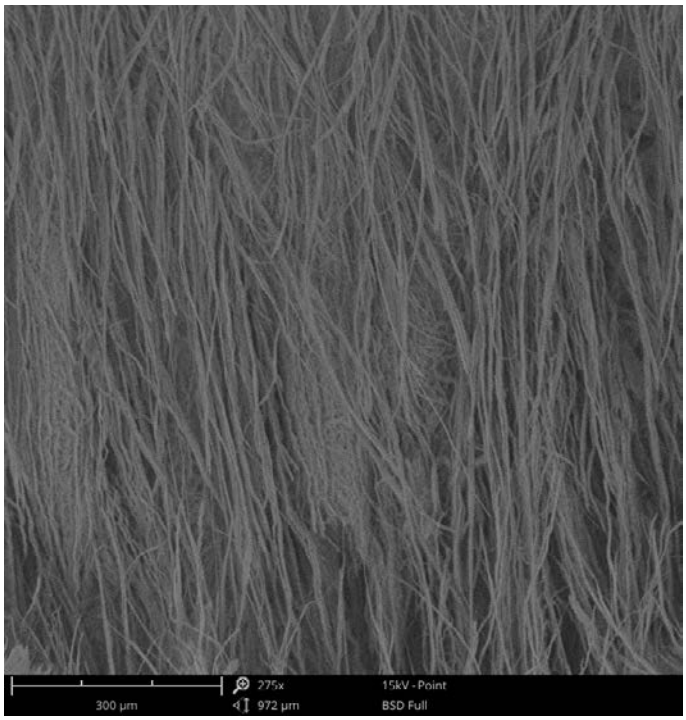
- Determine batch quality
- Determine manufacturing consistency
- Aid the design process
- Reduce material costs and achieve lean manufacturing goals
- Ensure compliance with international and industry standards

Specifications
Operation
Tensile and compression operation
Leadscrew
Dual threaded leadscrew with both jaws moving
Clamps
Serrated and flat sample clamps
Maximum force
1 kN or 0.15 kN
Speed range
0.2 mm/min to 1 mm/min
Travel
10 mm
Stroke
10 mm (from 10 mm to 20 mm)
Position resolution
300 nm
Position linearity
1% of full travel
Maximum sample size
• Thickness: 2.5 mm • Length: 25 mm • Width: 14 mm









A leather sample being pulled apart

Tensile and compression stress

The Thermo Scientific™ Phenom Tensile Sample Holder offers tensile as well as compression stress. Cyclic testing is also an option. Materials can be characterized by their strength. Compressive strength, or compression strength, is the capacity of a material or structure to withstand loads tending to reduce size, as opposed to tensile strength, which withstands loads tending to elongate. In other words, compressive strength resists compression (being pushed together), whereas tensile strength resists tension (being pulled apart).

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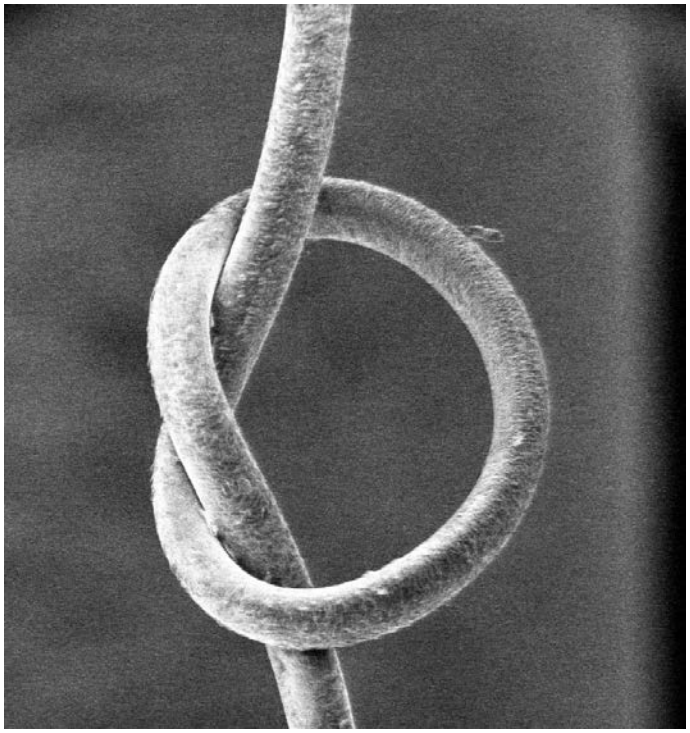

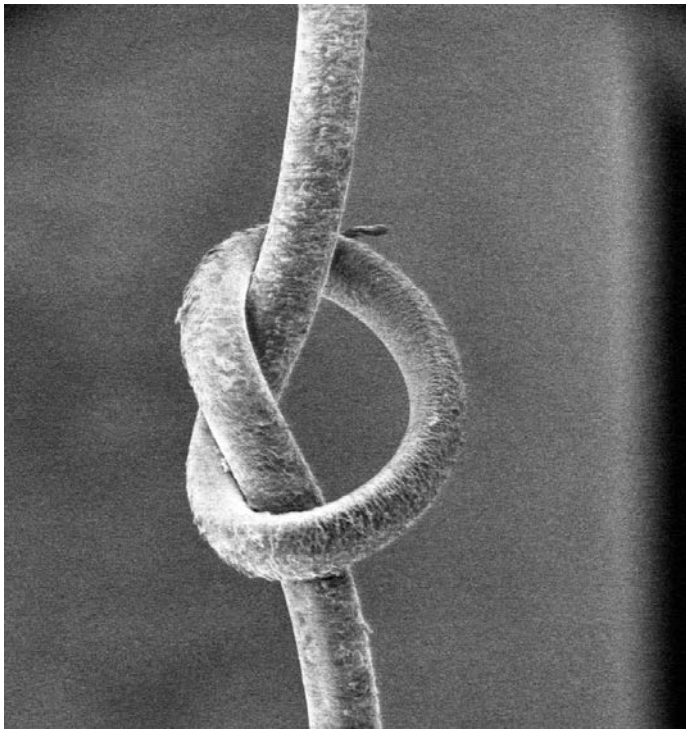

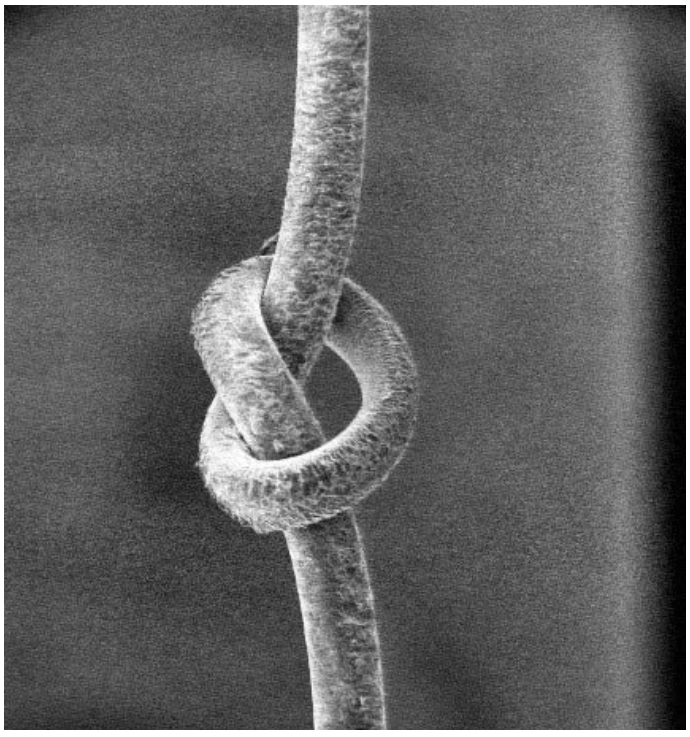

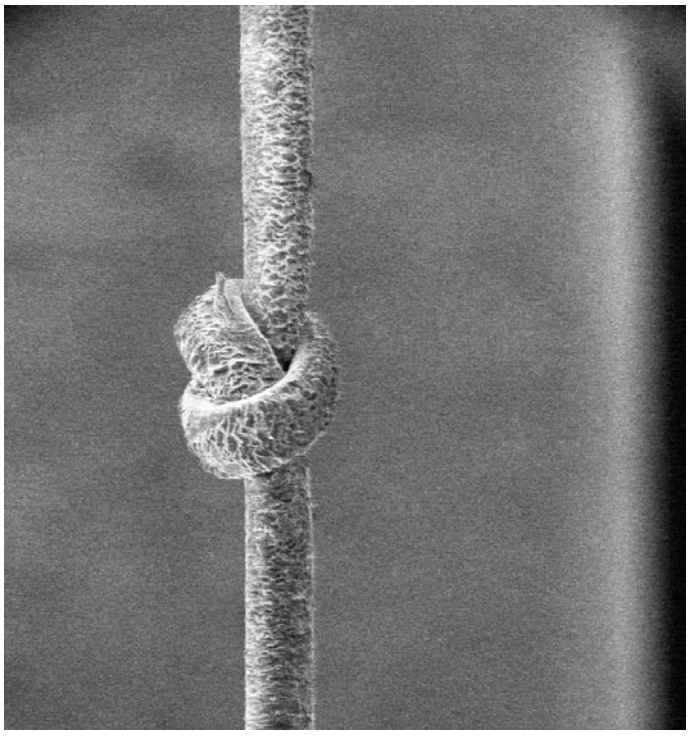

Endurance test of human hair observed with a SE detector

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