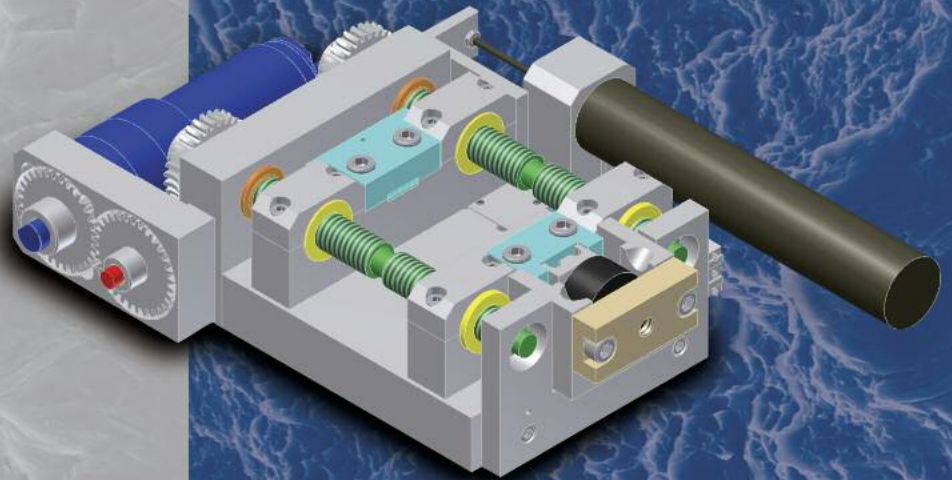


Precision Measurement  
and Material Testing  
Solutions

# SEM TESTER SERIES



MTI Instruments / Fullam  
Advanced Material Testing Systems  
for LMs, SPMs, and SEMs

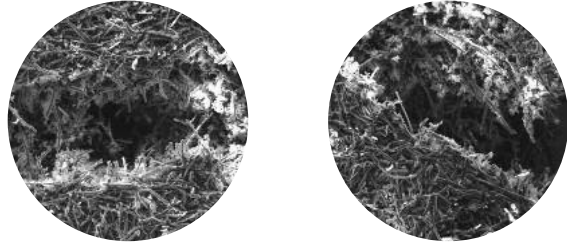


# Advanced Material Testing Systems for LMs, SPMs & SEMs

Obtain fast, accurate and reliable information about the mechanical properties of materials with MTII/Fullam's SEMtester series of tensile and compression testers. Specifically designed for use in Scanning Electron Microscopes (SEMs), Scanning Probe Microscopes (SPMs) and Light Microscopes (LMs), these miniature testers are ideal for performing experiments under magnification. This provides greater insight into early stages of material failure and a better overall understanding of how specific materials perform. In addition, grain dislocation

## Carbon Fiber Testing

### Dislocations and Crack Propagation

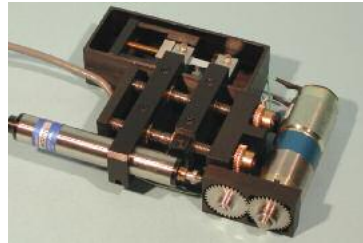


and crack propagation can be observed in real time, revealing more information about deformation than traditional, post-failure analysis techniques.

## Flexible Design

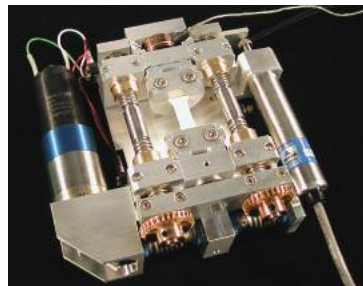
MTII/Fullam offers a variety of manual, semi-automated and fully automated platforms to fit any budget. Load frame capacities of 100 lb (450 N), 1000 lb (4500 N) and 2000 lb (9000 N) are standard with selectable load cells to improve accuracy and sensitivity, and to match customer requirements. Extended strain travel versions are available allowing longer, more ductile samples to be tested. Both horizontal and angled specimen clamps provide the flexibility to operate with typical microscopes and EBSDs. Quick-connect mounting adapters are provided and designed for seamless integration into most major microscopy tools. Customized port covers allow users to install systems without modifications to vacuum chambers or microscope platforms.

## LM Tensile Tester



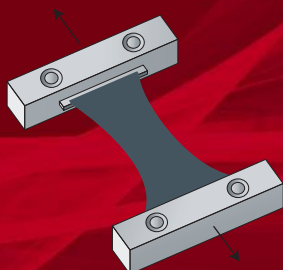
Custom design for immersion application.

## EBSD Tensile Tester

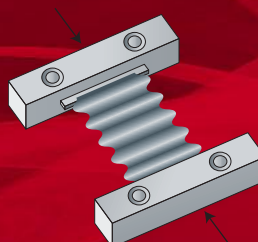


Typical configuration for EBSD application with tilting specimen holder.

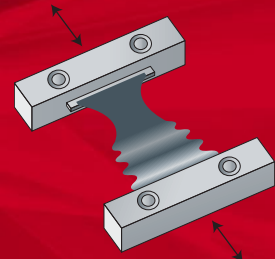
## Tensile



## Compression



## Fatigue

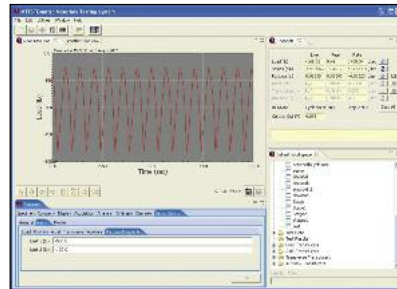




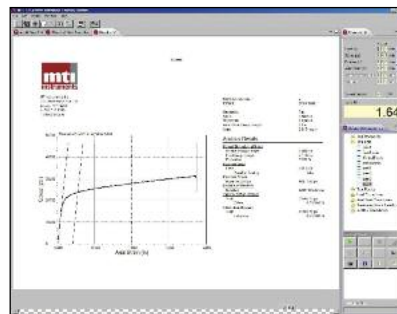
## Intuitive Operating Package

To control experiments and collect data, MTII/Fullam uses a proprietary Windows®-based control and material testing software system that complies with ASTM specifications. This powerful package provides a user-friendly interface to set system test parameters and analyze data. Specimen dimensions are defined along with strain rates and thresholds (load, elongation, time), which are then used to perform automated tests and calculations. These parameters are stored as “recipes” that can be called upon again for future experiments. Results are provided in real time and stress-strain curves generated while testing is in progress. Key parameters such as peak load/stress, offset yield, modulus of elasticity and other measurements are reported. Raw test data and results can be exported in standard

formats, making it easy to integrate with other data analysis and laboratory management systems.



Real-time plots of test parameters.



Easily exportable, customized analysis reports of test results.

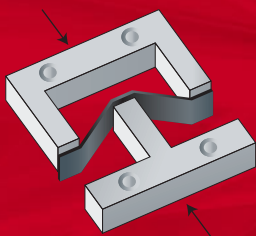
## Applications

The SEMtester line of products are capable of performing tensile, compression, bending, creep and fatigue tests on a variety of materials. Deformation and relaxation behavior can be observed under dynamic or static loading. Optional sample heaters or thermoelectric heaters/coolers can be used during testing to simulate actual operating conditions.

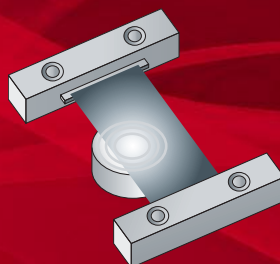
A variety of specimen clamps are available to accept virtually any sample configuration. This versatility makes the SEMtester product line suitable for testing a range of materials:

- Composites
- Metals
- Plastics
- Polymers
- Fibers
- Textiles
- Hairs
- Foods
- Minerals

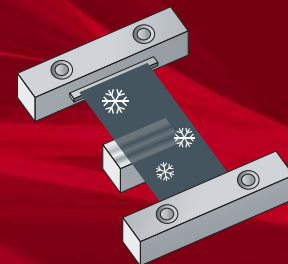
*Bending*



*Optional Heating*



*Optional Cooling*



## Options and Accessories

Since not all applications are alike, instruments used in research and development environments must be flexible and easily configured for different tests. That's why MTI/Fullam offers a variety of options and accessories to meet our customers'

changing requirements. Whether it's a basic manual tester or a completely automated servo control and data acquisition package, we have a solution to fit your needs. MTI/Fullam offers a number of standard and custom options including the following:

- Interchangeable load cells
- Specimen heaters and coolers
- Compression anvils
- 3- and 4-point bend fixtures
- Vacuum port covers
- Load and strain readout systems
- Round, threaded and stud-type specimen clamps
- Water cooling systems
- Gearboxes for faster or slower speeds
- Quick-connect mounting fixtures

## Specifications

### SEMtester Series

Model	SEMtester 100	SEMtester 1000	SEMtester 1000 EBSD	SEMtester 2000
Max Load Capability	100 lb (450 N)	1000 lb (4500 N)	1000 lb (4500 N)	2000 lb (9000 N)
Dimensions L x W x H	116 x 115 x 45 mm	194 x 120 x 57 mm	194 x 120 x 57 mm	225 x 140 x 75 mm
Weight	1 kg	1.5 kg	1.5 kg	2.2 kg
Max Sample Size	1 x 12 x 65 mm	2.5 x 10 x 65 mm	2.5 x 10 x 65 mm	3 x 10 x 75 mm
Max Strain Travel	31 mm	31 mm	16 mm	57 mm
Load Cell Accuracy	±0.5% of full scale load range			
LVDT Accuracy	±0.5% of full scale measurement range			
Power Requirements	100-240 Vac, 50-60 Hz			
Thermoelectric Heater/Cooler	-25°C to +80°C (±1.0°C control)			
Sample Heater	Ambient to 1200°C (±1.0°C control)			
Controller Environment	10°C to 43°C non-condensing			
Storage Environment	-18°C to 65°C non-condensing			
Data Acquisition Rate	Adjustable to 1 kHz max			
Computing Requirements	Windows XP, Vista or 7, 2 Gb DRAM or greater			
Export Capabilities	.csv, .pdf, .jpg, .bmp			

Typical parameters. Subject to change according to application requirements.

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*Contact us today and see why MTI Instruments, Inc. is a world leader in precision measurement and material testing solutions.*