

## UMF Equipment – Dynamic Mechanical Analysis System

### Mettler Toledo DMA1

Dynamic mechanical analysis (DMA) applies a periodic stress to the sample under test and measures the deformation in the material to determine the complex modulus. The force, displacement amplitudes, and phase shift are analyzed as functions of temperature, time, and frequency. This allows for the study and characterization of material properties, such as the viscoelastic behavior of polymers, glass transition temperature, transitions of molecular motions, creep and stress relaxation, Young's modulus, shear modulus, complex modulus (storage and loss modulus), damping behavior, etc.

#### Features:

- Temperature range: -190 - 600°C
- Heating / cooling rates: 0.1 to 20 °C /min
- Measurement frequency: 0.001 Hz to 300 Hz
- Maximum force and displacement:  $\pm 10$  N and  $\pm 1$  mm
- Sensitivity: 1 mN and 30 nm
- Deformation mode and max. effective sample size (L x W): tension (20 mm x 13 mm), 3-point bending (45 mm x 13 mm), dual cantilever (35 mm x 13 mm), single cantilever (17.5 mm x 13 mm), shear (10 mm x 12 mm), compression (10 mm x 16 mm)

Please refer to supplier information page for further details of the system:

[https://www.mt.com/hk/en/home/products/Laboratory\\_Analytics\\_Browse/TA\\_Family\\_Browse/ta-instruments/thermal-analysis-system-DMA-1.html](https://www.mt.com/hk/en/home/products/Laboratory_Analytics_Browse/TA_Family_Browse/ta-instruments/thermal-analysis-system-DMA-1.html)

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