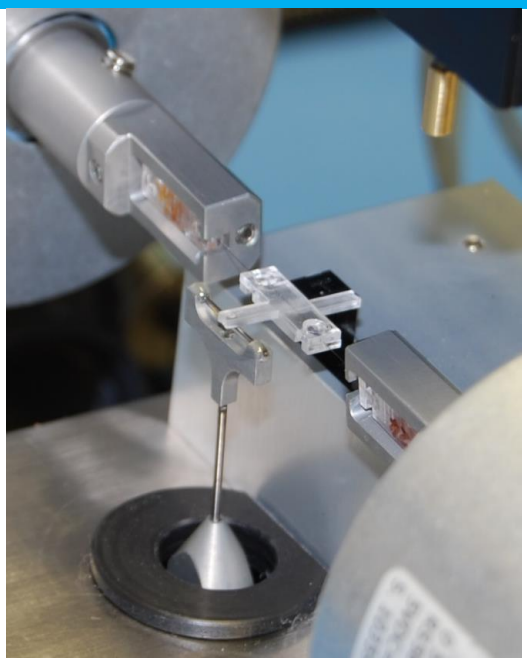
FTT950 - Fibre Torsion System



The Dia-Stron FTT950 Fibre Torsion System is specifically designed to measure the torsional properties of single fibres & filaments

General Information

Principal benefits

- Direct shear modulus measurements.
- High sample throughput rate with the ALS1500.
- Fully compatible with the Dia-Stron FDAS770 Fibre Dimensional Analysis System.
- Compact platform allows for system use within an environmental chamber.

Hair fibres undergo deformation when subjected to mechanical forces such as tensile, bending or torsion. These deformations, whether elastic, viscoelastic or plastic contribute to a fibre's mechanical behaviour. Understanding the physical processes which govern these deformations can provide a significant competitive advantage. Such uses involve companies involved in the personal care sector or within composite markets using natural, glass or epoxy fibres.

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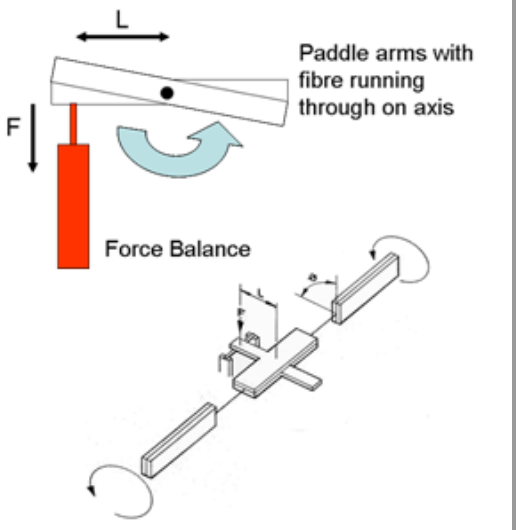
System Overview

The FTT950 torsional system uses a novel design to directly measure torsional forces. The shear forces are measured during the twisting of the fibre using an incorporated microbalance. This approach allows the automation of the method on a Dia-Stron ALS1500, and is fully compatible with the FDAS770 Fibre Dimensional Analysis system. Shear stress/strain or stress relaxation data is obtained and material properties such as shear modulus are calculated using the UvWin built-in analysis tools.

Fibre Measurement

Samples are mounted and measured using a 2-part plastic tab. Already available from Dia-Stron, this mounting technique allows for cross-sectional area measurements using the FDAS770. A central paddle is attached to the midpoint of the fibre.

The measurement is taken by simultaneously rotating the two ends of the fibre, causing the central paddle to contact the force balance. The applied force is recorded and the resulting torque is calculated. Shear modulus is calculated as the degree of rotation, applied to the cross-sectional area data.



Torque = Force (F) x Lever Arm Length (L)

Specifications

FTT950	
Fibre Preset Tension	1-100g
Linear Extension Range	0.01–1.5mm/s
Test Angle	0-360°
Angular Rotation Rate	0.1-20°/sec
Stress Relaxation Period	0-3600sec
Max Sampling Rate	10Hz

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