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Image-Based Fiber Orientation and Alignment Calculator

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Fiber Orientation Measurement

A software program based on Fourier transform methods (FTM) provides accurate image-based fiber orientation and alignment data in tissue samples. FTM surpassed other methods in delivering accurate results, findings confirmed by applying FTM to SEM micrographs of fibrin tissue analogs. The code may also be used to characterize fiber orientation or other microstructural features in a variety of samples that can be imaged.

Accurate Fiber Orientation and Anisotropy

Accurately characterizing fiber architecture is challenging, but when researchers compared FTM to mean intercept length (MIL) and line fraction deviation (LFD), they found that FTM was superior in several ways. FTM provided the most detailed orientation distribution, accurately captured the principal direction and anisotropy index, and was more flexible and significantly faster than other methods.

BENEFITS AND FEATURES:

- Fast, flexible and accurate
- Results confirmed by SEM micrographs
- Accurate fiber orientation and anisotropy index

APPLICATIONS:

- Determining fiber orientation and anisotropy
- Tissue samples
- Characterizing other microstructural features

Phase of Development Product available - The Image-Based Fiber Orientation Calculator is a set of MATLAB functions and requires that MATLAB is installed on the computer to run the calculator.

Researchers

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https://license.umn.edu/product/image-based-fiber-orientation-and-alignment-calculator