

MORPHOLOGY CHARACTERIZATION OF COTTON FIBERS

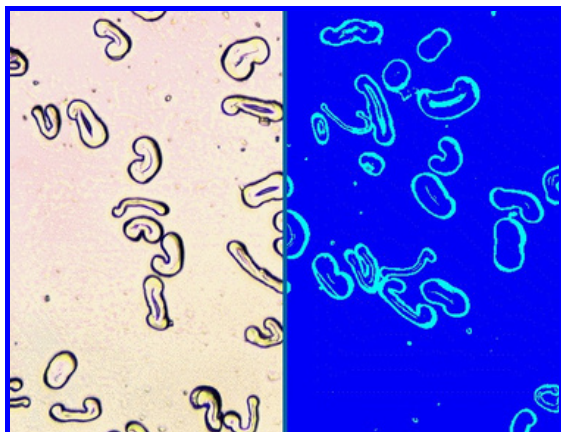


Figure 1: a) Original image (400X, 0.3342 $\mu\text{m}/\text{pixel}$). b) Binarization by Gray Thresholding of the original image. Background and cotton fibers were detected in blue, outline and lumens were detected in cyan.

Several binary transformations were necessary to obtain a satisfactory representation of the cotton fibers without lumens and to remove artifacts. Zone, Boolean, Transfer, Invert and Fill binary instructions were used into this routine.

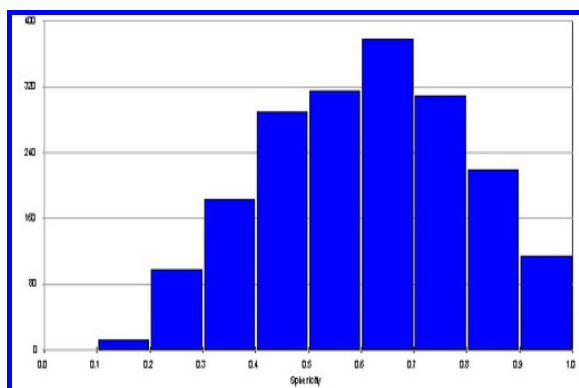


Figure 3: Sphericity distribution of fibers after lumens have been removed (100 fields : 1915 objects).

Sample Description

Oneslide withtwo similarcross sections of the same specimen of cotton fibers

Purpose of Analysis

Demonstrate theability of the image analyzer to automatically discriminate cross section of cotton fibers (without lumens) and, analyze surface and shape.

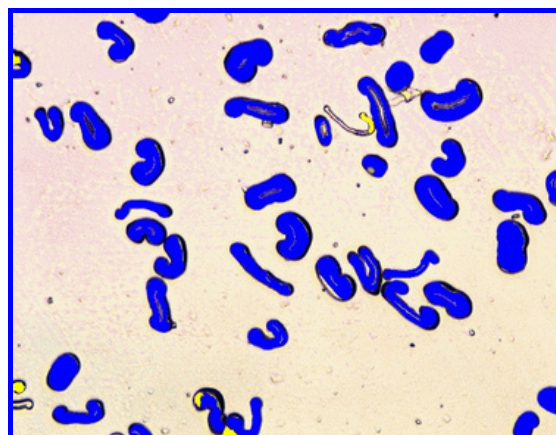


Figure 2: Final image before measurements.

The main difficulty of this application was to fill the small holes and scratches without removing the lumens. Some objects overlapped each other. Most of them were separated or discarded but despite all precautions some still overlapped.

A Guard Frame was applied to eliminate all incomplete objects at the edges of each field. Objects that are eliminated are necessarily analyzed in a subsequent field since the stage moves in guard frame size steps.

Apparatus

Image Analysis System:	Clemex Vision Software
Camera: Microscope:	Sony XC 77CE, B/W Nikon Optiphot-2 (40X) with transmitted light
Stage:	Motorized marzhauser ek8b-s1 (100 x 75 mm) with auto focus drive