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A MICROSCOPIC SYSTEM FOR AUTOMATED DETECTION OF DEAD COTTON FIBERS

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Abstract

This paper describes the image analysis algorithms for detecting dead fibers in an image captured through a microscopic imaging system. The system has a stable lighting source and a high resolution camera that can produce high contrast images. Dead fibers are the ones that died at a very early stage of their developments, and have extremely thin walls allowing more light to be transmitted than developed fibers. In an image, a dead fiber appears as a wide, bright and none-convoluted ribbon whose brightness is close to that of the background. We developed a two-step thresholding algorithm to separate low-contrast dead fibers from other fibers and the background, and then calculate the ratio of the dead fibers counted in all the images of one sample slide.