SPECTROSCOPIC APPROACH TO STUDY CELLULOSE DEVELOPMENT DURING THE SECONDARY CELL WALL BIOGENESIS IN COTTON FIBERS

N. Abidi
L. Cabrales
Fiber & Biopolymer Research Institute, Department of Plant and Soil Science, Texas Tech University
Lubbock, TX
E. Hequet
Fiber & Biopolymer Research Institute, Department of Plant and Soil Science, Texas Tech University
Texas AgriLIFE Research Station
Lubbock, TX

Abstract

Five cotton cultivars were planted in a greenhouse and individual flowers were tagged on the day of flowering (0 days post anthesis = 0 dpa). Five developing bolls per cultivar were harvested at different stages of development (from 10 until 56 dpa). Cellulose development and organization during the development of the secondary cell wall was investigated using Fourier Transform Infrared Spectroscopy. The analysis of the FTIR spectra revealed drastic changes of the spectra during different phases of fiber development. The principal component analysis showed the presence of two groups of spectra. The transition between the primary cell wall and the secondary cell wall could be clearly identified.