

Subject: Control of the grafting of an epoxy-based formalin-free treatment on cotton.

Techniques: MEB, μ -FTIR and ToF-SIMS

✓ Morphology and surface chemical composition.

Results:

➔ No deposit observed on the surface of the fibers

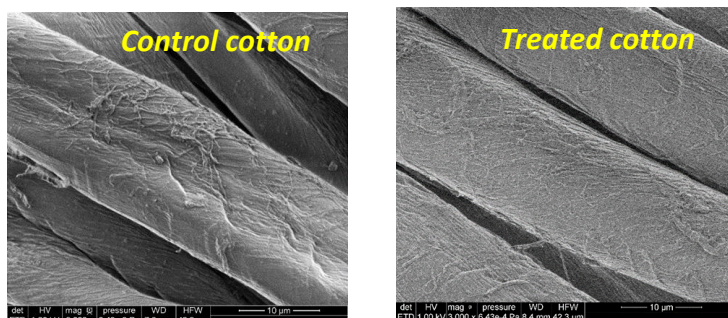


Fig. 1. SEM images

➔ The evolution of the ratio $R1^*$ (intensity of the band at 2875 cm^{-1} / intensity of the band at 1025 cm^{-1}) is an evidence of the presence of the treatment.

* 2875 cm^{-1} : band of strain vibrations of CH_2 increased by the presence of the treatment.

1025 cm^{-1} : band of C–O groupements, characteristic of cotton.

➔ Detection of oxygenated organic compounds ($\text{C}_2\text{H}_5\text{O}^+$ among others) not detected on the control cotton and attributed to the treatment.

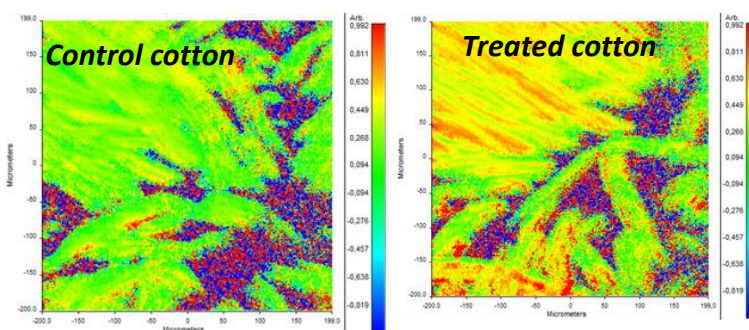


Fig. 2. FTIR spectra of control cotton and treated cotton

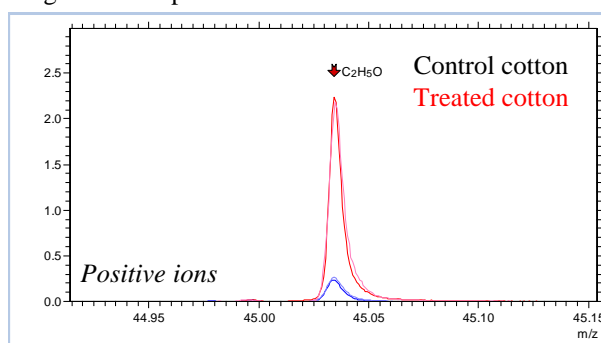


Fig. 3. Normalised ToF-SIMS spectra of control cotton and treated cotton

Conclusion : FTIR microscopy in ATR Imaging mode allows to map the presence of an epoxy-based treatment on cotton. This presence is confirmed by ToF-SIMS molecular spectrometry in spite of the absence of deposit observed in SEM.