

Analyse leather with the Quest™ ATR

ATR-FTIR is ideal for fast & accurate leather analysis

ANIMAL SKINS HAVE BEEN USED to make leather since ancient times and their texture and properties depend on which animal they come from. Chemical treatment with vegetable tannins modifies the skins to produce strong and flexible materials that resist decay.

Commercially, IR spectroscopy is used to test for consistency in batches of leather and to uncover fraud. Attenuated Total Reflectance (ATR) accessories like the Quest™ allow users to test a variety of leathers quickly and efficiently.

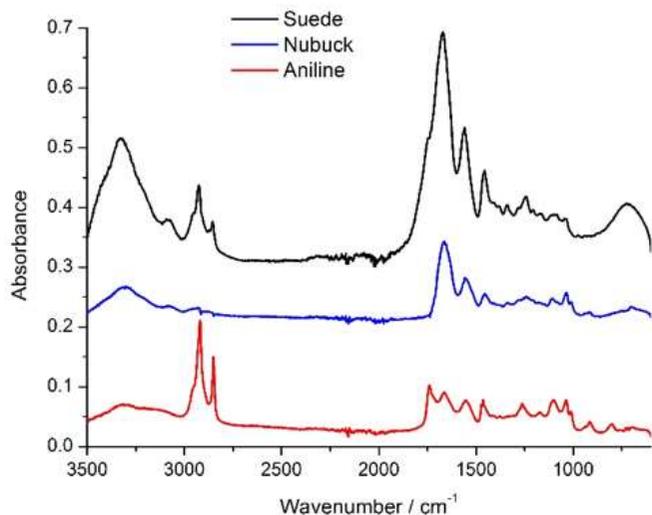


Figure 1: IR spectra of three leather samples

This note shows how ATR spectroscopy can be a fast and reliable technique to distinguish different leathers.

Results

Figure 1 shows the IR spectra of three material samples of nubuck, suede and aniline-dyed leather recorded using the Quest™ ATR accessory in a commercially available spectrometer.

The spectra were recorded by simply placing the leathers onto the ATR device for 20 seconds. Therefore, the turnover for sample analysis is significantly faster than traditional solid analysis methods.

Suede is primarily made from the lambskin, while nubuck is a cowhide leather that has been made to feel like suede.

Aniline leather is a leather made with soluble dyes that cover the material surface. The chemical makeup of all three samples is different and as such, their IR spectra are different.

If we focus on the lower wavenumber region of 1800-600 cm^{-1} , we can see the amide I and II band intensities differ for each material.

Therefore, the ATR technique allows for a fast and effective distinction of a large number of different samples.

Conclusions

IR spectroscopy allows users to assess the quality of fabrics in a reliable, consistent and fast way, without contaminating or damaging the material.

No sample preparation or solvents are needed for sample analysis, unlike alternative analytical techniques.

ATR-FTIR is the best spectroscopic method for reliable at-line analysis, providing manufacturing control and supply-chain checks. Complementary methods of analysis for more in depth studies on material adulteration and for the detection of fraud include SEM, as well as microscope surface mapping for quality control purposes.

Acknowledgements & references

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