

Micro sample analysis using ATR PRO ONE VIEW

Introduction

ATR methods is an effective tool to perform IR measurements efficiently.

In this method, it is necessary for user to set and press the sample on center of prism correctly to obtain good data especially when measuring micro sample which is smaller than prism size.

JASCO's new accessory, ATR PRO ONE VIEW has a guide function to find proper position while displaying on front monitor or PC monitor about the sample area.

There are many different types of false eyelashes for cosmetic purpose, which are made of human hair, animal hair, or natural fiber according to material labeling commercially. But, it means only textures actually as mink-like and sable-like, but many of those are made from synthetic fabric in fact. In this application note, analytical evaluation between human eyelash and the false eyelash declared as human hair is carried out with use of ATR PRO ONE VIEW.

Keyword: Micro sample, Material analysis, ATR

Measurement method

Set the human eyelash and the false eyelash declared as human hair commercially on the center of the prism with using the monitor. Measurement condition is shown below.

Measurement condition

Instruments: FT/IR-4600
Detector: DLATGS
Resolution: 4 cm^{-1}
Accumulation: 50 times
Method: ATR
Accessory: ATR PRO ONE VIEW
Prism: PKS-D1V



Fig.1 ATR PRO ONE VIEW

Measurement result

Figure 2 shows the sample images and the IR spectra of human eyelash and false eyelash. As shown in images, sample was completely set on the center of the prism. The peaks derived from Amide I, II are detected around 1640 cm^{-1} and 1550 cm^{-1} in human eyelash IR spectrum, which means that main component of human eyelash is protein. On the other hand, false lash IR spectrum is different from human's, and indicates the existence of the synthetic fiber product. The main component was identified as polybutylene terephthalate by database searching.

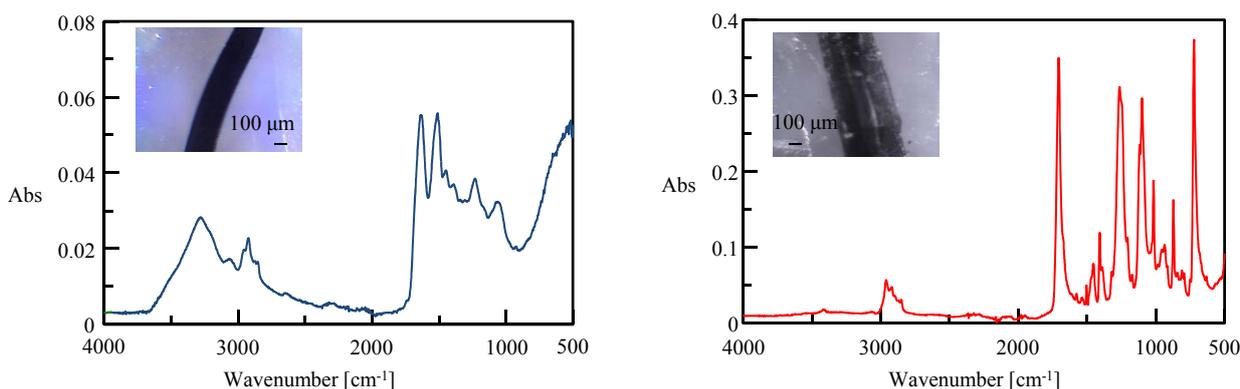


Fig.2 IR spectra of human eyelash (left) and false eyelash (right)

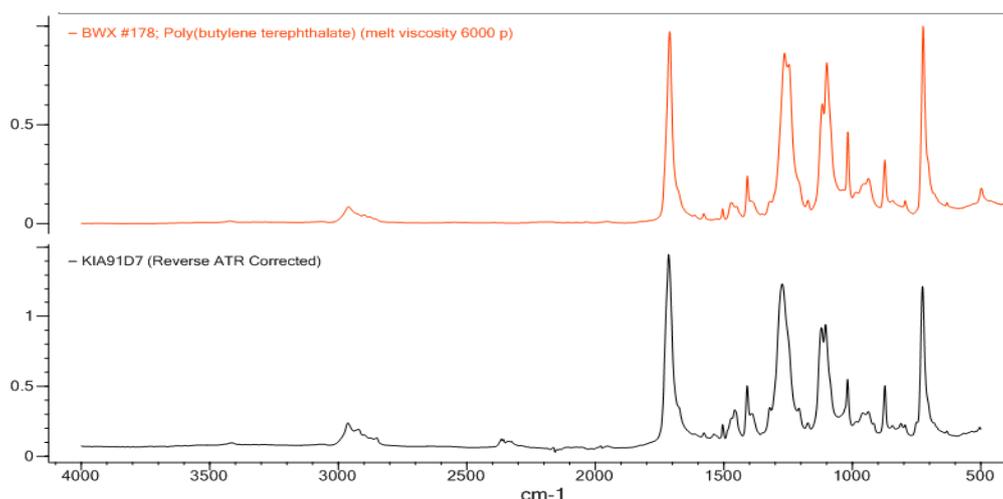


Fig.3 IR spectra of polybutylene terephthalate standard (top) and false eyelash (bottom)

Conclusion

As a result, ATR PRO ONE VIEW is proved as a useful tool to measure the micro samples and the main component of the false eyelash is identified as polyester.

In general, non-destructive analytical technique of micro samples is very important method for foreign material analysis, criminal investigation, and false labeling.

This note shows that ATR PRO ONE VIEW has huge capability to be used for non destructive micro sample analysis in such variety application fields.

Because ATR PRO ONE VIEW provides us with not only above analytical information but also other information as sample view and sample size, which can contribute to various applications.