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## IS34. FORENSIC APPLICATIONS OF INFRARED SPECTROSCOPY

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Infrared (IR) spectroscopy has been extensively used for the examination of trace evidence in a forensic field since it is non-destructive, rapid, objective, operator-independent and confirmatory technique. Such traces can be obtained from biological resources such as hair, blood, fingerprints and non-biological resources such as drug, gun-shot residue etc. The fingerprints which is unique per person, and the age of blood stains have been analyzed efficiently and successfully without destruction of the sample by IR spectroscopy. Moreover, postmortem time interval was estimated by the spectral analysis of metabolic changes in the tissues. This technique has been also successfully used in the characterization and screening of illicit drugs, explosives and inks etc.

The use of IR spectroscopy in Forensic Science started in 1970s with identification illicit drugs. Employment of Fourier transform processing in 1990s enabled to investigate different type of samples, including aqueous samples with increased speed and sensitivity. Therefore, with the development of instrumentation and the use of advanced chemometric analysis methods, these techniques have recently become more popular in forensics science. The development of the attenuated total reflectance (ATR) unit enabled the investigation of systems without the need for complex sample preparation. With the development of sophisticated techniques such as synchrotron radiation-Fourier transform infrared microscopy in conjunction with advanced statistical analyses, chemical properties of bulk and micro-sized particles can be identified. In this presentation, forensic application of infrared spectroscopy on determination of postmortem interval, hair analysis, fingerprint analysis, body fluids, drug analysis explosives will be specifically mentioned.

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