



ABSTRACT

Forensic science is a new phenomenon to world advanced era. Every day new techniques and novel imaginations are coming into light. Crime has also increased to a larger extent and new ways of crime execution has developed by criminals. Apart from crimes, ratio of accidents is also alarming. In this outstanding circumstances, forensic science is a perfect counter tactic to handle all intentional and un-intentional happenings. There are so many circumstantial evidences that can be now handled with the aid of forensic science to solve the criminal case. Hair, blood, saliva, skin and body fluids are among few crime scene evidences that must be collected cautiously from the site. Hair is one of the most important and prime significant evidence in terms of execution or release of suspect. The study is conducted to differentiate between dyed and non-dyed hair using ATR FT-IR and SEM. To execute research purpose, hair samples are collected from both target segments including dyed and non-dyed hair. Samples are of diverse nature that they don't belong to one kind of human population. On the other hand, samples are collected from all age groups and both genders of human population. Samples are forensically collected, their originality is made sure and all measures are taken to prevent from any distortion. Then these are analysed on forensic principles by the use of ATR FT-IR (Attenuated total reflection-Fourier transform infrared spectroscopy) and SEM(Scanning electron microscopy). Micrographs are obtained from SEM while transmittance and absorbance spectrums are obtained from ATR FT-IR. They are further investigated to study distinction characteristics between dyed and non-dyed hair. Differentiation basis are extracted and tabulated. Statistical approach is adopted then to obtain calculated statistical results which clearly differentiate dyed and non-dyed hair. By use of forensic chemistry dimension, forensic evidence is compared and successfully differentiated which is basis for comparison to the spectrum of any suspect, resulting in culmination of criminal case.