Contribution ID: **191** Type: **Oral**

"Comb-Shaped Nanotube Architectures Synthesized under Oxygen-Free Conditions for Forensic Biomarker Detection

Abstract The development of nanotechnology has created new opportunities in forensic science to more sensitively detect biological evidence traces. This study produced stable nanostructures and controlled carbonization by synthesizing comb-shaped nanotube structures from pistachio shells in an oxygen-free environment. Scanning Electron Microscopy (SEM) was used to analyze the morphology. The results showed well-defined comb-like nanotube arrangements with high surface area and porous surfaces, which greatly improve biomolecule adsorption. X-ray diffraction (XRD) analysis revealed a broad peak at $2\theta \approx 24–26^{\circ}$, confirming the nanotubes' amorphous carbon nature with defect-rich sites that are ideal for adsorption and interaction with forensic biomarkers. Fourier Transform Infrared Spectroscopy (FTIR) was used to further validate the structure and revealed distinctive peaks that corresponded to the –OH, C=O, and C–H groups. These groups of functions offer

Author: RACHAYYA KALMATH, Spurthi

Co-authors: Mr SRINIDHI THIYAGARAJAN, Srinidhi thiyagarajan; Ms REENA, reena susan

Presenter: RACHAYYA KALMATH, Spurthi

Track Classification: Forensic Sciences