Contribution ID: **201** Type: **Poster**

GREEN SYNTHESIS OF ZINC OXIDE NANOPARTICLES USING BIO-DERIVED DEEP EUTECTIC SOLVENTS

Given the drawbacks and risks of traditional chemical techniques, forensic scientists are paying close attention to the development of environmentally friendly methods for latent fingerprint visualization. The green synthesis of zinc oxide (ZnO) nanoparticles using bio-derived deep eutectic solvents (DESs) made from zinc nitrate and lemon peel extract is the main goal of this work. The DES served as a reducing agent, solvent, and stabilizer during the straightforward, economical, and environmentally safe synthesis process. XRD, SEM-EDX, BET, FTIR, and UV-Vis spectroscopy were used to assess the size, shape, and crystallinity of the resultant ZnO nanoparticles. Under UV light, these nanoparticles showed intense fluorescence, which improved the visibility of latent fingerprints on a variety of surfaces. The technique produced consistent nanoparticle size and shape ensured biocompatibility, and minimized environmental impact. This study demonstrates the potential of green-synthesized ZnO nanoparticles as a sustainable and efficient alternative for forensic fingerprint development, supporting future advancements in eco-friendly forensic nanotechnology.
Keywords: Green synthesis, Zinc oxide nanoparticles (ZnO NPs), Deep eutectic solvents (DESs), Latent fingerprint visualization, Fluorescence-based forensic analysis

Author: Ms SAHER B S, Aleeya

Co-author: Mr KALLUMPURAT, AKHILESH

Presenter: Ms SAHER B S, Aleeya

Track Classification: Forensic Sciences