

Novel nano-particles and their application as fingerprint powders

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A fingerprint is one of the most common types of physical evidence found at crime scenes. It is basically a complex mixture of natural secretions of the body from three types of glands: eccrine, apocrine, and sebaceous glands. It also contains contaminations from the environment. The chemical compositions of the deposit are mostly water (99%) with minor amount (up to 1%) of inorganic and organic compounds. There have been number of studies undertaken to develop materials used in lifting fingerprints. In general, the impressions made by finger marks found at the crime scenes fall into three categories, such as plastic (or impression), visible (patent) and latent prints; the latter require enhancement in order to be visualised and identified.

Since the 1990's there has been significant development in the visualisation methods of latent fingerprints. This includes the combination of optical, physical, and chemical methods. In spite of all of the current methods for detecting latent finger-marks, there is a strong demand for new and more efficient reagents to visualise latent fingerprints.

In this study, we report the synthesis of novel fingerprint powders based on silica nanoparticles of various sizes with three different surface functionalities. Functionalised nanoparticles have been applied to detect latent finger-mark deposited onto different non-porous surfaces and the results have been compared with currently available commercial powders (K9 Scene of Crime Equipment Limited).

Biography

Mohammad has worked in Forensic Department in Saudi Arabia police for more than ten years. He has completed his master degree in forensic materials from Heriot-Watt University. Now, he is in his final year of PhD at the School of Forensic and Investigative Sciences, University of Central Lancashire. He has attended 3 National conferences and 1 International conference in the area of Forensic Science.

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