

Histidine decorated Magnetite Nanoparticles for the latent fingerprint enhancement on broad range of surfaces

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Abstract

In the recent era nanotechnology takes an attention due to various applications in broad area of science and technology. However, the use of different nano particles for fingerprint enhancement gives very rapid, notable and promising result. Among all, Magnetic Nanoparticles (MNPs) receiving increasing attention in physical, biological, material and forensic sciences due to their multifunctional properties such as small size, super magnetism and biocompatibility. herein, the latent fingerprints are developed by using Histidine functionalized MNPs (His@MNPs) as a fingerprint enhancing agent. His@MNPs are synthesised using in situ wet chemical method and characterized using XRD, FTIR, HR-TEM & SEM. Due to Imidazole group on the surface of His@MNPs, it gives rapid and peculiar fingerprint enhancement. Additionally, Synthesised nanomaterial is efficient on most of the surfaces, like hard-surfaces, soft-surfaces, porous and non-porous surfaces. However, His@MNPs have affinity to bind with Negatively charged component which gives enchantment to latent fingerprint. The interaction between positively charged Amine and negatively charged fingerprint surface developed print which is seen by necked eye as well as in the range of UV radiation around 350- 390 nm. This work may open up other potential application of HIS@MNPs in preventive and detective forensics. II. Image: III. Biography (Up to 100 words) She has a Ph.D. in Nanomedicine from the School of Nanosciences, Central University of Gujarat. Her academic journey includes M.Phil. in Nanomedicine, Diploma in Astrobiology from Indian Astrobiology Research Centre (IARC), master's in forensic science and bachelor's in microbiology. She has 14 publications in international science and research journals, 3 proceedings and 1 book chapter. She is the recipient of the International Young Scientist Award at 4th International Young Scientist Congress-2018, Prof. H.R. Pandya Academic Performance award-2019 by Parul University, Best Women Faculty Award-2020 at 2nd Virtual International Conference on Forensic science and criminal Investigation (ICFSCI-2020), Research Excellent Award-2020 by Institute of Scholars and Best Research Paper Presentation Award-2021 at international Conference "Forensic Gyan-2021". She serves as the editorial member of the journals 'Nano-medicine & Nanotechnology' and 'Science World Journal of Pharmaceutical Sciences', "Journal of Medico legal Reporter" and other international peer reviewed journals. She also serves as peer reviewer for many international Journals and bodies i.e. Science Direct, Nanomedicine and nanoscience, Birac-Sitare, etc. She is a life member of International Nanoscience Community (Nanopeprika), Association of Chemist and Biologist and Indian criminology and Forensic Science Association (ICFSA)..

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