

Nano Forensics-Unsighted Progress & Achievements †

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Abstract: Forensic science deals with applying scientific methods and techniques to ensure the error-free investigation of a crime. Various analytical methods such as identifying DNA, developing a latent fingerprint, performing autopsies, or even examining evidence at the molecular level assist a forensic expert in letting him answer the questioned situation at the crime scene. Nanotechnology is an emerging area of science that involves the engineering of nano-size particles of various materials. The creation and use of structures, devices, and systems that have novel properties and functions because of their small size are defined as Nanotechnology. Various physical and chemical methods have been used to produce functional materials and structures on a nano scale. Today, the revolutionary development of nanotechnology has become a highly energized discipline of science and technology. Nanotechnology, in association with Forensic science, emerged in upgrading the tools and techniques to aid forensic experts to deliver opinions in a short time span. To extract DNA from blood, hair, skin, semen, and saliva, magnetic nanoparticles are being used. The high fluorescence quenching of polymers on the nanoparticle surface inclined the researchers towards detecting DNA with the help of nanomaterials. In the upcoming era, fluorescent nanoparticles will be used to measure the concentration of vitreous humor, which would determine TSD. Various drugs such as morphine etc., can also be detected using functionalized nanoparticles. For the electrochemical detection of explosives, it is advisable to use nanomaterials-based sensors because of their high sensitivity and selectivity. Nano forensic, if explored in the right direction, may help masses from various criminal activities and also can serve justice. This review article targets to enlighten various unsighted achievements in the field of nano forensics.

Keywords: Forensic science; nanotechnology; fluorescent nanoparticle; evidences; conventional approaches.

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Conflicts of Interest

The authors declare no conflict of interest.