B13 Synthesis of Nanosized Ag and Carbon Particle for Latent Fingerprint Developing

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After attending this presentation, attendees will learn a new technique for developing latent fingerprints on thermal and carbonless papers.

This presentation will impact the forensic community by demonstrating a new latent fingerprint method.

Fingerprints are often considered one of the most valuable types of physical evidence in the field of forensic science. In general three forms of fingerprint evidence that may be found at a crime scene: visible prints, impression prints, and latent prints. Method of latent fingerprint development is powder method, ninhydrin method, iodine fuming, and cyanoarylate fuming were the four most commonly used techniques of latent prints development. Powder method is the simplest and commonly used procedure for developing latent fingerprint. In general there are three classes of fingerprint powders: regular, luminescent, and metallic. Powder adheres to the ridges depends on the size and shape of particles that compose the formulation. That powder should be selected which affords the best color contrast with the surface being dusted. The technique depends on the mechanical adherence of fingerprint powder to the moisture and fingerprint residue components of the skin ridge deposits. In order to obtain latent fingerprint developing from nonporous evidence, the selection of detectant should consider the color contrast and physical properties of the object. Fingerprint powders are commercially available in a variety of compositions and colors. In general, gray color powder of aluminum, black color powder of charcoal and fluorescence powder are mostly used for this purpose. In this research, the nano-sized silver particle was fabricated by the chemical reduction methods using silver nitrate and reducing agent, hydrazine. The efficiency and characteristics of manufactured Ag particles for the developing latent fingerprint are compared as particle shapes of sphere, rod and flake type. Also we compared the data with that of black colored powder of m for rod type mm for sphere type, 0.9 mm carbon. The size of Ag powder are 1 ~ 7 mm of flake type. In mm for flake type, and carbon powder is 5 ~10 mm and 10-20 mm the terms of fingerprint developing efficiency of new Ag materials, the 10% enhancement of confirm friction ridge pattern points are achieved as comparison to commercial gray colored powder and carbon powder. Enhancement of the attachment to fingerprint ridge and reduced scattering was also found in this case. The newly manufactured carbon powder by our team shows significantly less m, formless) in glass and scattering than commercial black powder (10~60 mm we observed about 10% enhancement of developing friction ridge pattern points. New manufactured 9:1 (carbon : Ag) mixture observed about 10% enhancement of latent fingerprint developing than commercial black powder and also color contrast exhibits good. Therefore, it is reported in this presentation, newly formed nano-sized Ag and carbon particles exhibit the very good developing ability toward latent fingerprint from nonporous evidence.

Nanosized Ag, Carbon Particle, Latent Fingerprinting

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