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Exploration of Functionalized Nanoparticles for Fingerprint Detection JACOB AJIMO, LUN MA, XING ZHANG, KWAN CHENG, WEI CHEN, DEPARTMENT OF PHYSICS TEXAS TECH TEAM, DEPARTMENT OF PHYSICS UT AT ARLINGTON TEAM — We report an exploratory study on the use of water soluble luminescent nanoparticles for latent fingerprint detection. Thioglycolic acid coated CdTe and ZnS:Mn^{2+} nanoparticles were used for fingerprint detection. Latent fingerprints on glass, aluminum and plastic substrates have been successfully labeled with the nanoparticles for periods ranging from 20 minutes to 24 hrs. The labeling is probably due to the amidation reaction between the functional carboxyl group of the nanoparticles with the amine groups of the biomaterials present in the fingerprint residues. The specificity of the nanoparticles at various wavelengths is displayed in the resulting images. The nanoparticles have high quantum yields, tunable fluorescence wavelength and are photo-stable which make them suitable for use in developing ultra-sensitive, target –specific and background suppressed latent fingerprint detection.

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