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Synthesis of Flower like Monoclinic Zirconia: Its Structural, Photoluminescence and Latent Finger Print Studies

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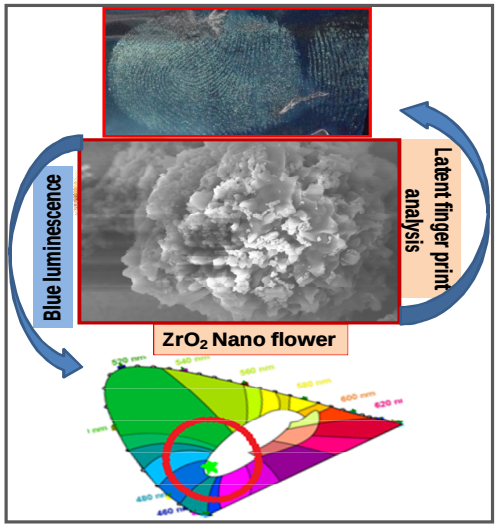
ABSTRACT

Flower like zirconia nanomaterial was prepared by simple precipitation technique under high dilution conditions. The material prepared and calcinated at 400°C exhibited monoclinic phase. The FTIR spectra showed an intense peak at 749 cm^{-1}, which is the characteristic peak of monoclinic phase of zirconia. The photoluminescence spectra showed intense blue emission on excitation at 260 nm. The peaks are positioned at 361 nm, 424 nm, 440 nm, 487 nm. These peaks are arising due to oxygen vacancy defects and singly ionized oxygen vacancy in the zirconia lattice. The material also used to develop latent fingerprints, which show clear formation of finger print tracks, justifying that the material is a good competitor in forensic application.

Graphical Abstract



Keywords: Flower like Monoclinic Zirconia, Photoluminescence, Latent Finger Print Studies.