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PREPARATION, CHARACTERIZATION, OPTICAL AND PHOTOLUMINESCENCE STUDIES OF GAMMA RAYED ERBIUM DOPED NANOCRYSTALLINE CAF_2

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ABSTRACT

Nanoparticles of calcium fluoride (CaF_2) doped with Erbium doped are prepared using co-precipitation technique. Preliminary characterization of the samples is carried out using PXRD, SEM and FTIR. The nanoparticles are irradiated with γ-rays. Optical studies on the irradiated samples are made through absorption and luminescence measurements. The results of optical absorption (OA) spectra showed generation of various color centers. All the centers responsible for the absorption are identified and attributed to defects generated due to gamma radiation. Photoluminescence (PL) spectrum exhibited emission peaks at ~387, 442, 460 and 517 nm. The mechanisms of OA and PL of the observed samples are discussed in detail.

KEYWORDS: *Nanocrystals; Optical Absorption; Photoluminescence; Lattice Defects; Color Centers*