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Optical and Photo-stimulated EPR Studies on Intrinsic and Mn-doped Zinc Germinates Phosphors XIAOJUN WANG, Department of Physics, Georgia Southern University, Statesboro, GA 30460, USA, ZHIYI HE, Optoelectronic Institute, Guilin University of Electronic Technology, Guilin, Guangxi, China 541004, LI MA, Department of Physics, Georgia Southern University, Statesboro, GA 30460, USA — Intrinsic zinc germinates (Zn2GeO4) and Mn-doped Zn2GeO4 phosphors have been prepared using solid state reaction and their photoluminescence and phosphorescence studied. Phosphorescence from both the Mn2+ ions and host defects in Zn2GeO4 has observed upon UV excitation, while the Mn2+ ions present a longer persistent time than the defects. The charging process has also been studied and different behaviors of Mn2+ and defects observed. Electron paramagnetic resonance (EPR) and photo (UV)-stimulated EPR spectra have been collected for both host defects and Mn dopants from 20 K to room temperature. UV-induced EPR signal and the decay processes have been analyzed and provided a better understanding of the trapping mechanism for the phosphorescence. EPR signal from Mn2+ has been found decreasing after the UV excitation, indicating that the population of Mn2+ ions decreases in the trapping state and the valence change from Mn2+ to Mn3+ when hole trapping occurred.

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