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Emission study on the gamma-ray irradiation effects on the ferroelectric Pb(Zr,Ti)O_3 thin films YUNSANG LEE, JUNWHI LIM, Soongsil University, SUN A YANG, S. D. BU, Chonbuk National University — We investigated the photoluminescence of the gammy-ray irradiated Pb(Zr,Ti)O_3 (PZT) thin films with the various total doses up to 1000 kGy. The PZT thin films were prepared on the Pt/Ti/SiO_2/Si substrates by using a sol–gel method with a spin-coating process. It was found that the visible emission emerges near 550 nm with the gamma-ray irradiation. The intensity of the emission increased with the increasing dose amount. The spectral feature of the gamma-ray induced emission was quite narrow, which was distinguished from that formed by normal defects such as oxygen vacancy. We suggest that the gamma-ray irradiation should generate a specific type of defect state inside the PZT films, which could be detected by the low temperature photoluminescence spectroscopy.

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