

도플러 넓어짐 스펙트럼을 이용한 희토류 증감지 결합 특성

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We present, a simple, high-performance Doppler broadening spectrometer for positron annihilation experiment(DBPAS). We used DBPAS to measure the concentration, spatial distribution, and size of open volume defects in the rare-earth intensifying screen materials.

The screens were exposed by X-ray varying the exposed doses from 3, 6, 9, and 12 Gy with 6 MV and 15 MV, respectively and also irradiated by 37 MeV proton beams ranging from 0 to 10^{12} ppls. The S-parameter values were increased as increasing the exposed time and the energies, that indicated the defects generate more. The S-parameters of the samples with X-rays are varied from 0.5098 to 0.5108, on the other hand, with proton beams are varied from 0.4804 to 0.4821.