

Abstract Submitted
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Study of Defects That Trap Excitons in Yttrium Aluminum Garnets Doped With Rare-Earth Elements¹ FARIDA SELIM, CHRIS VARNERY, GARY COLLINS, DAVID MCKAY, SHERIF REDA, Washington State University — Excitons play a fundamental role in transporting energy in photonic materials. Understanding and controlling excitons dynamics through their interactions with activating impurities and lattice defects is key to improving scintillation and optical properties. Single crystals of yttrium aluminum garnet (YAG) crystals doped with rare-earths were studied by positron annihilation, thermoluminescence and optical spectroscopy. Evidence of defect complexes was found in the YAG structure. Positron lifetime measurements were performed to characterize those defects. Effects of dopants on the optical properties and lattice defects were investigated.

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