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Thin films of $CsPbBr_3$ nanocrystals on scintillating wafers

There is a rising demand for new detectors with ultra-fast timing for the use of Time-Of-Flight measurements in medical imaging and high-energy physics. One way of tackling this challenge is a composite material of bulk inorganic scintillators with nanoscintillators exhibiting quantum confinement effect. In this work, thin films of $CsPbBr_3$ nanocrystals were prepared on various substrates and their radioluminescent and timing properties were tested. Enhancement in radioluminescence intensity and addition of ultrafast decay components was observed by applying $CsPbBr_3$ thin film on scintillating wafers. Significant improvements in detector time resolution of composite materials in comparison with pure inorganic scintillating crystals were observed.

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