

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Efficient plastic scintillators utilizing phosphorescent dopants.

IAN CAMPBELL, BRIAN CRONE, Los Alamos National Laboratory — We demonstrate improved light yield from plastic scintillators utilizing a phosphorescent dopant to collect both singlet and triplet excitations created by ionizing radiation. We specifically considered poly(vinyltoluene) and poly(9-vinylcarbazole) doped with an Ir phosphor. We present the spectral, temporal, and integrated yield response as a function of dopant concentration to pulses of 10 keV electrons. Both doped plastics yield a maximum light output $\sim 200\%$ of anthracene with decay times < 850 ns. High light yield was obtained for Ir element fractions up to ~ 10 wt% implying that these scintillators may be useful for gamma detection.

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Date submitted: 25 Oct 2006

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