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Applications of fluorene moiety containing polymers for improved scintillation light yield

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# 1 Applications of Fluorene Moiety Containing 2 Polymers for Improved Scintillation Light Yield

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6 Abstract: A terfluorene compound, designed and synthesized for its photophysical and  
7 polymerizable properties, was employed as a host material in polymer scintillators to achieve a  
8 31% increase in light yield versus a commercial standard viewed with a Silicon Photomultiplier.  
9 Monomers of the compound were mixed with a solubility promoting vinyl toluene and either a  
10 commercial or custom designed fluor containing fluorene moiety structures. Fluors were chosen  
11 with overlapping energy levels to promote resonance energy transfer from the host material and  
12 improve light emission. The mixture was cured via bulk polymerization into cylindrical polymer  
13 monoliths which were coupled to either a photomultiplier tube or silicon photomultiplier to

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Abbreviations: OLED, Organic Light Emitting Diode; VT, vinyl toluene; ADS86, American Dye Source compound ADS086BE; Poly(vinyl carbazole), PVK; DTTMC, 1,1-Di-(tert-butyl-peroxy)-3,3,5-tri-methylcyclohexane.

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