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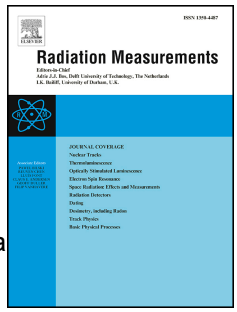

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Radioluminescence and Thermoluminescence of Rare Earth Doped and Co-Doped YF_3

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Abstract: An investigation of the luminescent properties of undoped and rare earth (RE) singly- and co-doped YF_3 was carried out by means of radioluminescence (RL) and thermoluminescence (TL) measurements. Materials were obtained by ligand-free co-precipitation with Ce, Tm, Tb or Eu substituting for Y, followed by calcination in air at 500 ^{o}C for 1 h. RL measurements confirmed the effective luminescence activation of the host. TL measurements revealed a relatively intense contribution of the host, with Tm doping yielding the strongest signal among the singly-doped samples. Co-doping with Ce and Tm was investigated within the 0.5-5 mol% range for each RE, with the 0.5,0.5 (Ce,Tm) mol% co-doping yielding the strongest luminescence signal. However, a clear correlation between the RE dopant(s) and TL peaks was not found.

Keywords: YF_3; rare earth; radioluminescence; thermoluminescence; thermosensor