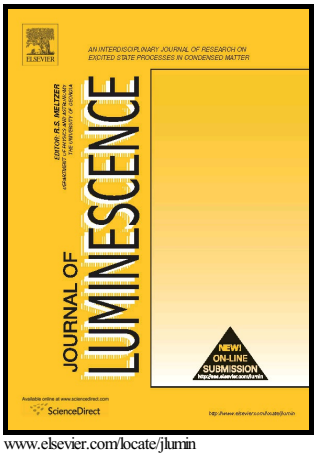

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$KCl.SrCl_2:Eu^{2+},Nd^{3+}$ phosphor for possible application in solar photovoltaics

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ABSTRACT

Crystalline silicon solar cells are most successfully commercialized devices. However, there is spectral mismatch between the incident solar radiation and the spectral response curve of crystalline silicon. In particular, near ultraviolet and blue radiations are not fully utilized. In the past, several phosphors have been proposed for spectrum modification. However, most of them were based on the f-f transitions of rare earths. These are too weak and too narrow to be of much practical use. A phosphor with strong excitation in near ultraviolet /blue region is desired. Such phosphors may be derived from allowed f-d transitions of rare earths. Synthesis and characterization of one such phosphor viz. $KCl.SrCl_2:Eu^{2+},Nd^{3+}$ is reported. It shows good absorption in near ultraviolet region arising from f-d transition of Eu^{2+}, and emission around 1065 nm due to efficient energy transfer from Eu^{2+} to Nd^{3+}.

Key Words: photoluminescence; solar cell; spectrum modification; quantum cutting; NIR emission;

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