

RED UV LED PHOSPHORS

A.A. SETLUR and A. M. SRIVASTAVA
GE CORPORATE RESEARCH AND
DEVELOPMENT
NISKAYUNA, NEW YORK 12309

W. W. BEERS
GE LIGHTING
CLEVELAND, OH 44110

High CRI/high luminosity white light sources generally require a narrow orange-red component centered at ~610-620 nm. It is well established in the lighting industry that Eu^{3+} doped phosphors can readily satisfy this requirement. Typically, the position of the $\text{Eu}^{3+}\text{-O}^{2-}$ charge transfer band (CTB) is at wavelengths <300 nm in oxide host lattices, so there are no strong absorption transitions in typical Eu^{3+} doped oxide phosphors that can be used for UV LED (350-370 nm) excitation. Consequently, it will be necessary to select the appropriate host and dopant ions to sensitize Eu^{3+} luminescence for UV LED applications. We will show that both host lattice absorption as well as transitions localized on a single ion can be used to absorb UV LED radiation after which energy transfer to Eu^{3+} ions leads to orange-red emission. We will discuss the efficiency of these phosphors and the potential implications for UV LED products.