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Phosphors for optoelectronic device applications

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The syntheses of phosphors and display phosphors of various host matrices by different preparative methods are very important in the LED phosphor industry. Role of preparative variables in synthesis of phosphors and display phosphors along with basic requirements are discussed in the present paper. Nano phosphors are preferred over micron size phosphors in a number of applications not only due to their particle size but also better optical properties. Some of the techniques such as solid state diffusion, flame and laser pyrolysis and sol-gel process are being employed to manufacture. The main advantages of nano phosphors in potential applications are solid state lighting, medical, security, displays, remote thermometry and thermo luminescence radiation dosimetry. The present paper discusses the synthesis of display phosphors applicable in phosphor coated LEDs (PLED) for lighting applications. Light emitting diodes and white light emitting diodes lamps having a life of 1,00,000 hours are going to replace the present existing lamps soon. LED lamp (LED light bulb) is a solid-state lamp that uses light-emitting diodes (LEDs) as the source of light. The LEDs involved may be conventional semiconductor light-emitting diodes, organic LEDs (OLED), or polymer light-emitting diodes (PLED) devices, although PLED technologies are currently commercially available. Each of individual light-emitting diodes is small compared to incandescent and compact fluorescent lamps, multiple diodes are often used together. In recent years, as diode technology has improved, high power light-emitting diodes with higher lumen output are making it possible to replace other lamps with LED lamps. One high power LED chip used in some commercial LED lights can emit 7,500 lumens for an electrical power consumption of 100 watts. LED lamps can be made interchangeable with other types of lamps. Diodes use direct current (DC) electrical power; to use them from standard AC power they require internal or external rectifier circuits. LEDs are damaged by operating at high temperatures, so LED lamps typically include heat management elements such as heat sinks and cooling fins. LED lamps offer long service life and high energy efficiency, but initial costs are higher than those of fluorescent and incandescent lamps.

Biography

K V R Murthy has completed his PhD in Applied Physics from M. S. University of Baroda. He is a Managing Editor of International Journal of Luminescence and Applications. He has published more than 500 papers in various journals and conference proceedings also he has done research projects amount more than 5 millions.

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