HORIBA Scientific

Application Note

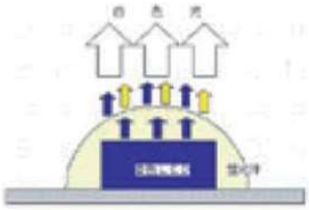
Optoelectronics

Cathodoluminescence

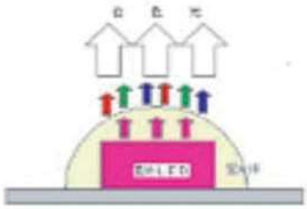
CL25

The evaluation of phosphor for white LEDs by CL

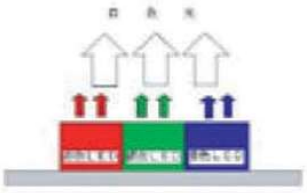
The white LEDs draws much attention as the new light source for illumination and as the backlight for liquid crystal displays. It is said that the progress of flat type displays and white color LEDs is largely attributable to the characteristic improvement of phosphor itself. There are currently three kinds of ways to obtain the white color.



White LED by blue LED + phosphor

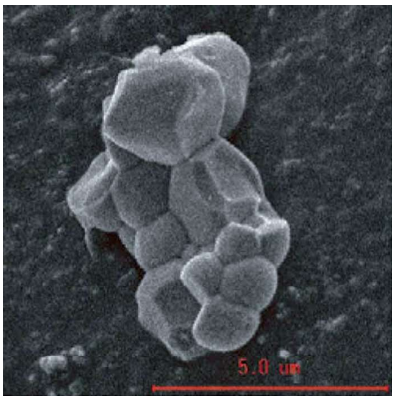


White LED by near ultra-violet LEd + red, green and blue phosphors

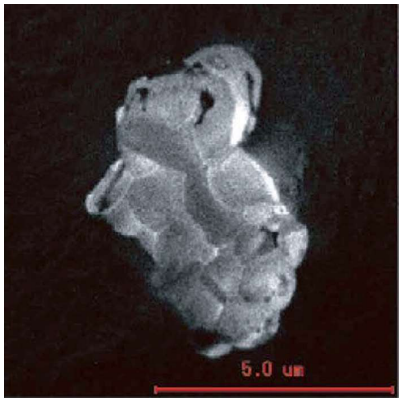


White LED by red, green and blue LEDs

Phosphor plays a key role to obtain white light as for blue LED + phosphor and near ultraviolet LED + phosphors. In order to improve high bright white LEDs, it is necessary that the whole phosphor particle emits light homogeneously. When measuring with CL the phosphor used as white LED, the area which does not emit light in phosphor particle can be observed.



SEM image of phosphor used as white LED



CL image of phosphor used as white LED

CL system is used for evaluation of non-luminescent area to improve luminescent efficiency and characteristics.

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