T16-133

Tohoku University's Invention

Quantum dot phosphors free from hazardous elements

Environment and human friendly light-emitting materials for displays and LEDs exhibiting excellent emission performance

Summary

Colloidal quantum dots have been commercialized for backlight-downconversion in liquid crystal displays.
However, existing technology uses cadmium selenide, which contains toxic cadmium, so cadmium free materials exhibiting equivalent or surpassing performance are strongly demanded. Cadmium free materials currently developing are InP, $CuInS_2$, $AgInS_2$, but their emission band width is broad, i.e., the monochromaticity is not good, and the blue emission has not been achieved.
This invention is about the technology to achieve blue and green light emission with Zn(Te,Se) colloidal quantum dots; and to achieve red light emission with Zn(Te,S) colloidal quantum dots. This technology provides cadmium free quantum dots phosphors exhibiting narrow band emission, and the quantum dots can replace CdSe quantum dot phosphors.

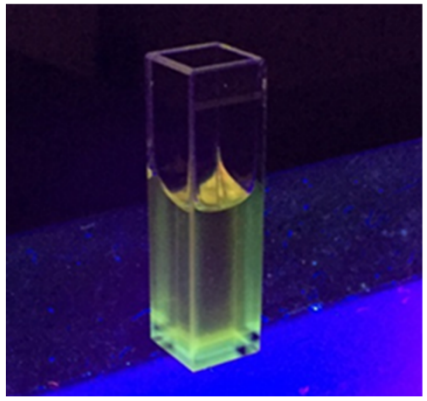
Application

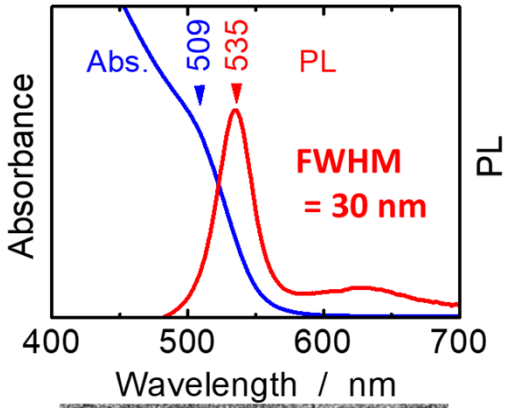
Fluorescent substance, display, light-emitting element

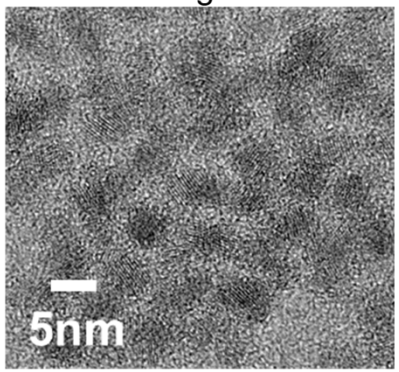
Patent Data Sheet
Patent publication number: JP2017-248935 (T16-133)
Inventors: OMATA Takahisa

Implementation

An example of the colloidal quantum dots emitting narrow-band and green photoluminescence







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