

# Red light emitter(blue light excitation type)

Efficiently converts blue LEDs into red light with high color purity

## Overview

Phosphors are used in lighting and displays, and in recent years, fluorescent dyes as well as inorganic phosphors have attracted attention. However, conventional red phosphors have presented challenges for application in next-generation LEDs, displays, and sensors due to limited durability, excitation by ultraviolet light alone, and material toxicity.

A complex consisting of europium (Eu) and organic molecules emits strong red light when excited by ultraviolet light and has high color purity, making it a promising light-emitting material. However, conventional Eu complexes have poor absorption ability in the long-wavelength blue light region, making them unsuitable for white LEDs.

The present invention introduces a new carbon structure based on a fused polycyclic aromatic group into Eu(III), achieving **high-brightness red emission when excited by blue light (450 nm)**. This complex possesses **high color purity, high durability**, and is a **light-emitting material that does not contain the toxicity** of quantum dots.

## Product Application

- Blue light excited Eu light emitter for solid state lighting

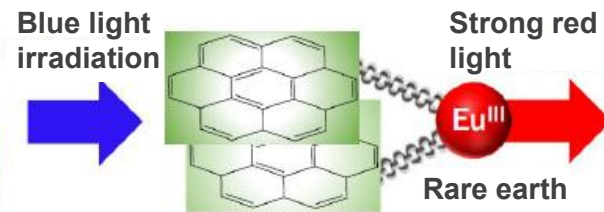
## IP Data

IP No. : JP7063484, US11499093, CN110337441  
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 Admin No. : HK25-005



(photolibrary.jp)

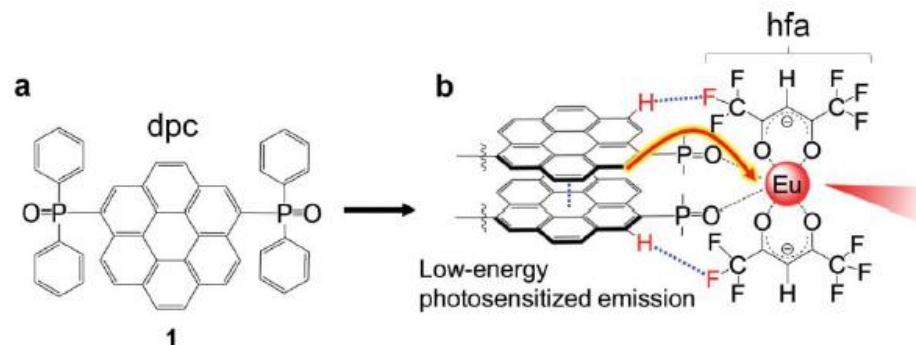
Examples of the use of light emitters



New nanocarbon structure

Luminescence of new rare earth molecules

## Features · Outstandings



Laminated nanocarbons act as antennas to absorb light and efficiently transfer energy to Eu.

## Related Works

[1] Y. Kitagawa. et al., Communications Chemistry, 3,3 (2020)  
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