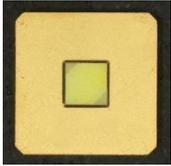


EPOCH-Neo

Unrivaled New Phosphor for the Brightest White-Light

Applications

- ✓ **Automobile Headlight**
- ✓ **Projector**
- ✓ **Solid-state Illumination**



EPOCH-Neo (MGC) Device



What's EPOCH-Neo? **EPOCH-Neo** is the **BEST Phosphor**

EPOCH-Neo is a melt growth composite (MGC) consisting of single crystalline Ce:YAG phosphor and Al_2O_3 (sapphire) which has high thermal conductivity. Two materials are continuously tangled with each other without any organic binder, air space, nor boundary layer. Yellow light emitted from Ce:YAG excited by blue LEDs and LDs is scattered by the boundaries between Ce:YAG and Al_2O_3 and effectively extracted from the surface of EPOCH-Neo, while heat generated by Stokes shift or non-radiative transition is dissipated along Al_2O_3 .

EPOCH-Neo DEVICE consists of EPOCH-Neo and a heat sink, specially designed by the expertise of OXIDE for superior heat dissipation. EPOCH-Neo has been improved by further optimized crystal growth conditions. Thus **EPOCH-Neo DEVICE** can provide much higher luminance and can accept high power irradiation of a blue LD (B-LD).

Advantages

- ✓ **High Thermal Conductivity**
- ✓ **Ultra-High Brightness**
- ✓ **High Durability**

Characteristics of Phosphors

| | Ceramic | Single Crystal | EPOCH | EPOCH-Neo |
|---|-------------|----------------|--------|-------------------------|
| Luminous Efficacy^(*) (lm/W) | — | — | 170 | 235 |
| Thermal Conductivity (W/mK) | < 10 | 13 | ~20 | ~20 |
| Durability against B-LD Irradiation | Weak (< 4W) | strong | strong | Strong (>60W) |

(*) Measurement was conducted for a phosphor device with an integrating sphere.
Luminous efficacy is luminous flux of phosphor divided by the laser power.

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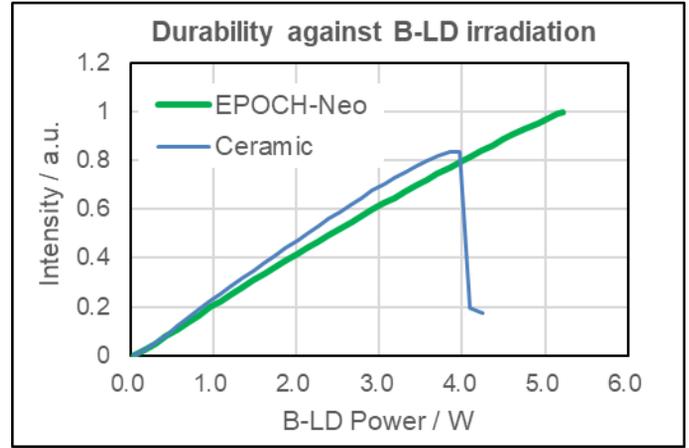
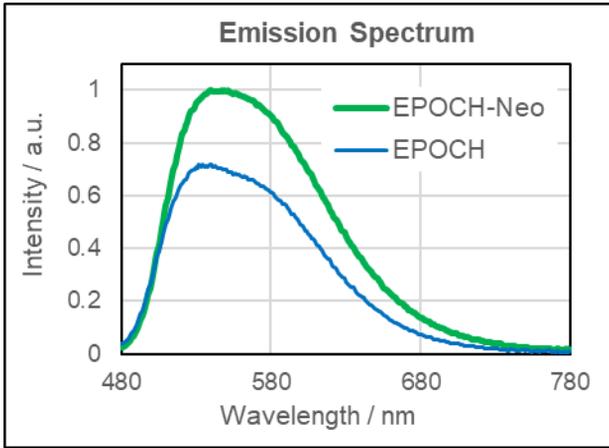


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Oxide Yamanashi

Photoluminescence and Reliability of EPOCH-Neo



- ✓ Optical properties of EPOCH-Neo have been further improved compared with those of the former EPOCH .
- ✓ EPOCH-Neo maintains linearity in the high power range compared to Ceramic due to its good heat dissipation ability.

Principle of EPOCH-Neo Phosphor

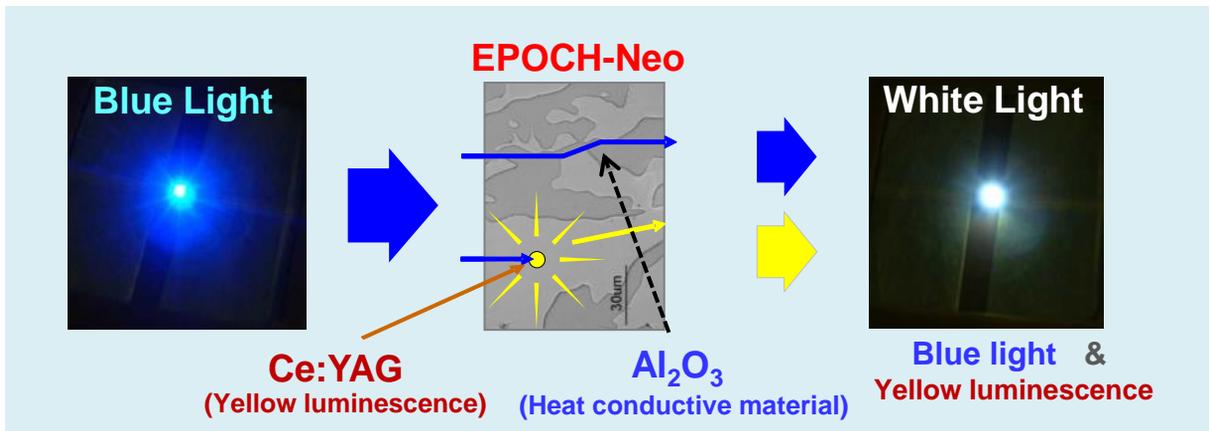
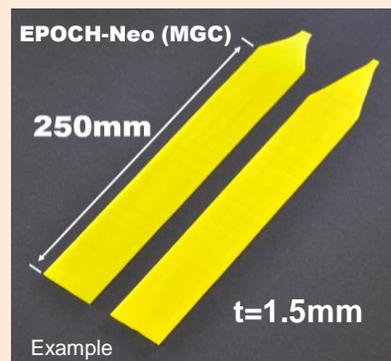


Image of Phosphor Ingot (Ribbon Type)

The EPOCH-Neo is synthesized by the technique which Adamant Namiki Precision Jewel Co., Ltd (3-8-22, Shinden, Adachi-ku, Tokyo, 123-8511, Japan, E-mail: naphia@ad-na.com) has used in in the world's first mass-production for sapphire substrate. This technique has successfully enabled to achieve to optimize the Ce concentration and crystal structure of MGC.



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