Nov/Dec 2020 | Issue 82

LED professional Review

Ad Close
Oct 12th

Material Due:
Oct 19th

Digital Publication
Nov 15th

Print Publication
Nov 25th

Key topics

FUTURE PROOF LIGHTING TECHNOLOGIES AND DESIGNS

Lighting Fixture Design
Ecodesign

AI & IoT Controls
LiFi Communication

UV-C Disinfection
Green Walls
LED Projectors

Phosphors
Chromaticity Shift

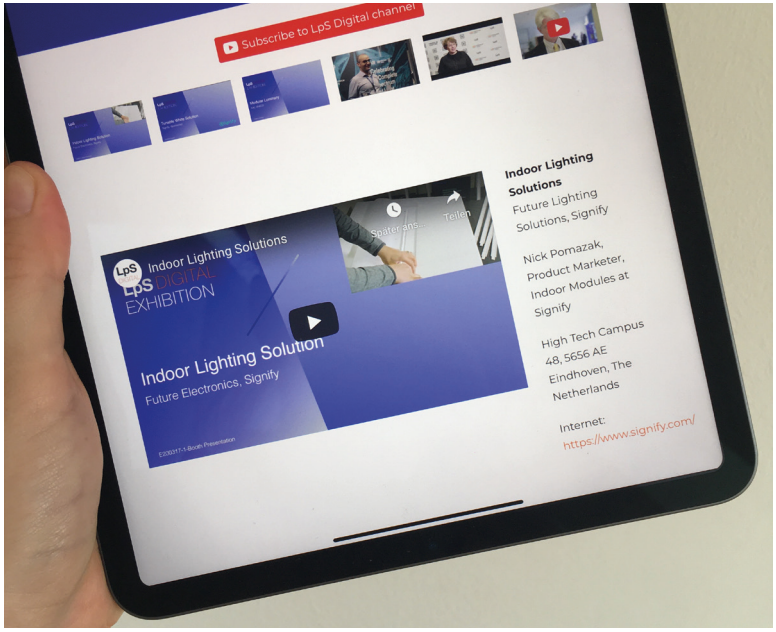
Wider global distribution

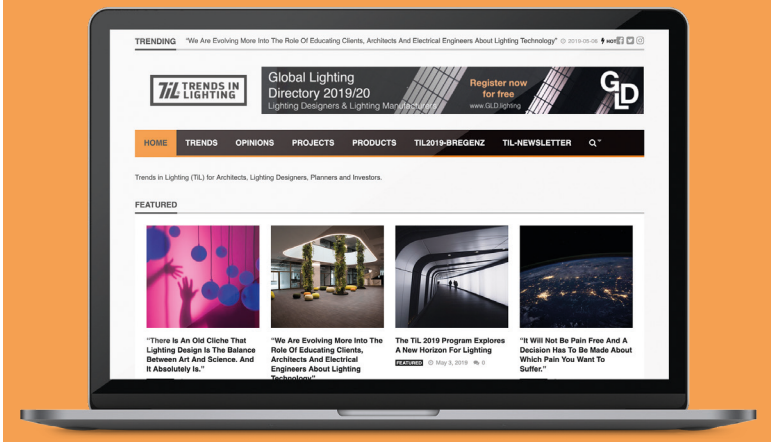
Technology Channels

LED professional Review Subscribers: 27,500
LED professional Twitter: 22,000
Publisher's LinkedIn Channel: 11,000
LED professional LinkedIn Group: 700
LED professional Online: YES

Design Channels

Trends in Lighting LinkedIn Group: 4,600
Trends in Lighting Online: YES
Trends in Lighting Newsletter: 15,000





This issue will reach over

60,000 Readers

published by Luger Research

Trending Topics in the 82nd LpR

TECH-TALKS

Kris Evans, Market Development Manager for IoT at Cree Lighting

For many years the biggest efficiency gain has been achieved by improvements in LED manufacturing technologies. Meanwhile we are coming close to the physical limits in this respect and driver efficiency is becoming more important. While daylight dependent lighting control is not new, with AI and IoT, controls received a boost to help become a key element in energy saving. Cree Lighting, together with its partners, has carried out several projects and investigated the different aspects, from energy savings to user-satisfaction and costs. Following the results report by Market Development Manager, Kris Evans at the LightFair virtual conference, LED professional got the exclusive chance to take it one step further by discussing the findings and asking for background information.

RESEARCH

Quo Vadis Biogenic Phosphors?

Today's white light-emitting diodes (WLEDs) are based on rare-earth or toxic materials that are controlled by a few countries. Indeed, they are one of the most critical bottlenecks to ensure the sustainable development of WLEDs. ARTIBLED is a European FET-OPEN initiative that aims at advancing organic phosphors based on fluorescent proteins as emitters and artificial or biogenic polymers as packaging matrix for the next generation of sustainable WLEDs. The authors provide an overview about the progress of this research highlighting the recent results in first devices based on fully biogenic phosphors.

Optimum LED Lighting for Green Walls

Green walls are of increasing interest as they offer several benefits: They purify the air, reduce the ambient temperature and create a sense of well-being. But especially indoors, they need appropriate illumination. A consortium of research and industry partners conducted a collaborative research study called ‚Optimum White LEDs'. The authors, present the results in regards to plant health and user appreciation of three different light sources of different Spectral Power Distributions (SPDs).

TECHNOLOGIES

A Novel Technology on the Way to Replace Rotating Projector

Dynamic lighting is already used in several applications and has become an increasingly important part in lighting. An innovative dynamic luminaire technology aims to replicate the beam of a rotating projector within a static encapsulation, achieved by a patented planar optical micro-tracking technology. The authors explain the technology and the latest progress in their development. They demonstrate use cases to point out the advantages over conventional technologies in respect to costs, compactness, high power output, homogeneous luminance, and continuous displacement of the light.

Trending Topics in the 82nd LpR

SPECIAL TOPIC – LIGHT QUALITY

Micro LED Displays: Is this the Opportunity Red Nitride LEDs Have Been Waiting for?

Full: Phosphide-based LEDs are widely used for conventional red LED applications. Despite the recent progress of nitride-based red LEDs their performance can‘t compete against phosphide-based red LEDs. However, the requirements for micro LED display applicätions are different compared to conventional applications, which makes nitride-based red LEDs attractive even with their lower performance. For successful micro LED volume production, cost and yield are inevitable. Today this is only possible with silicon industry manufacturing excellence on a large substrate diameter like 200 mm or 300 mm; an option that nitride-based red LEDs grown on a Si substrate, offer. In other words: Not the EQE, but cost and yield could be the dominating parameters in micro LED displays. Furthermore, matching the wafer size and the combination (e.g. by bonding) with CMOS driver wafers are important for micro displays with extremely high PPI. Therefore, the advanced technology nodes of 300 mm silicon process can enable required functionality and increase energy efficiency of the CMOS driver. With color conversion using quantum dots or phosphors applied to InGaN blue LEDs or high Indium (In) composition InGaN red LEDs, there are two different approaches to realize nitride-based red LEDs. In this article, we will describe the recent progress of high In composition InGaN red LEDs.
Publishing: Phosphide-based LEDs are widely used for conventional red LED applications. Despite recent progress of nitride-based red LEDs, their performance can‘t compete against phosphide-based red LEDs. The authors demonstrate that the requirements for micro LED display applications are different compared to conventional applications and they explain why this makes nitride-based red LEDs attractive, even with their lower performance such as scaling to 300 mm wafer diameter and thus being able to build monolithically integrated micro LED displays on a wafer level. The article also includes the latest information on the recent progress of high In composition InGaN red LEDs.