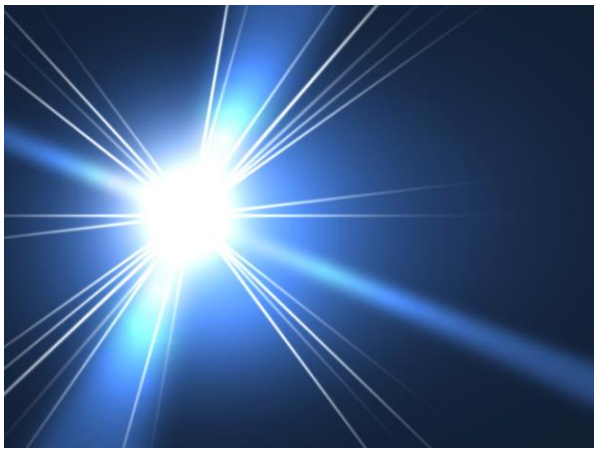
Molecular white-light emitter

LED, frequency-conversion IR → VIS, brilliancy

DESCRIPTION OF TECHNOLOGY

Modern light-sources for illumination are usually based on light-emitting diodes (LED). White-light LEDs are using galliumnitride (GaN) and phosphors, so that the narrow-band ultraviolet (UV) emission of GaN is converted into visible light. The emission characteristics of these LEDs are of lambertian-type, i.e. the light is emitted over a broad dihedral angle.



© Chris – Fotolia.com #167547917

This emission characteristic is useful for applications like displays which require large viewing angles. For applications requiring a more brilliant emission characteristic it is necessary to place an optical lense in front of the LED.

The innovation presented herein, provides a new type of (white) light source with a most brilliant emission characteristic for applications which need brilliant white-light, e.g. automobile headlights.

The innovation uses amorphous materials composed of symmetry-free, diamondoid-like cluster molecules which are readily available from ubiquitous resources instead of phospors for the conversion of infrared (IR) light into white-light. The emission characteristic of the original IR-light is to a great extent preserved, so that by use of, e.g., IR-Laser-diodes the brilliancy of

AT A GLANCE …

Application fields

- Manufacturing / application of white-light emitters, e.g. LEDs

Business

- Illumination technology
- Automotive

USP

- Conversion of IR-light into white-light
- Preservation of laser-brillancy upon usage of IR-Laser diodes as primary sources

Development status

- Proven on laboratory scale

Patent status

Priority application filed on June 10th 2016 in EP; subsequent PCT-Application filed on June 1st 2017, pending.

REFERENCE No.: TM 925

the IR-excitation-light is preserved within the emitted white-light, resulting in an extraordinary brilliant source of white-light.

APPLICATION FIELDS

The invention can be applied advantageously in any application that needs brilliant white-light, e.g. headlights of any type, microscopes, projecting systems etc., within science, technology and economy (optoelektronics / illuminating engineering).

ADVANTAGES OVER THE PRIOR ART

The excitation frequency of the new method for the conversion of invisible light into visible white-light is using infrared light instead of ultraviolet light. The brilliancy of the excitation light-source is maintained throughout the whole conversion process so that, e.g. by use of an IR-laser-diode as source of excitation light, the brilliancy of the original laser light is preserved within the finally emitted white-light.

STATE OF THE PRODUCT DEVELOPMENT

The method has been proven to work on laboratory scale by use of IR-laser-diodes as source of excitation light, but will also work with any other source of IR-light.

MARKET POTENTIAL

Currently the area of illuminating technology experiences a fundamental upheaval by use of LED-technology. By providing convenient access to most brilliant white-light LEDs, the technology presented herein is expected to have great market potential.

COOPERATION OPPORTUNITIES

On behalf of its shareholder Philipps-Universität Marburg, TransMIT GmbH is looking for co-operation partners or licensees for distribution / further development in Germany, Europe, USA and Asia.

A TECHNOLOGY OF

Philipps Universität Marburg

REFERENCE No.: TM 925

Contact

TransMIT Gesellschaft
für Technologietransfer mbH
Kerkrader Straße 3
35394 Gießen
GERMANY
www.transmit.de

Contact Person

Niklas Günther, M.A.
Tel: +49 (0) 641 9 43 64 53
Fax: +49 (0) 641 9 43 64 55
E-Mail: niklas.guenther@transmit.de

TransMIT
Gesellschaft für
Technologietransfer mbH

SYSTEM PARTNER FOR INNOVATION