

الندوة العلمية الدولية في الفيزياء والتعليم الإلكتروني

برعاية السيد رئيس جامعة الفلوجة أ.د. صباح إبراهيم المحترم وبإشراف السيد عميد كلية العلوم التطبيقية الأستاذ المساعد الدكتور محمد جبير مهدي المحترم

يقدم قسم الفيزياء الطبية في كلية العلوم التطبيقية - جامعة الفلوجة وقسم الفيزياء في كلية العلوم - جامعة بغداد وقسم الفيزياء في كلية العلوم للبنات - جامعة بغداد وقسم التحسس النائي ونظم المعلومات الجغرافية في كلية العلوم - جامعة بغداد الندوة العلمية الدولية حول الفيزياء والتعليم الإلكتروني وذلك في يوم الخميس الموافق 2020/5/21 الساعة الرابعة عصرا إن شاء الله .
عبر تطبيق FCC ومنصة google classroom



UNIVERSITI SAINS MALAYSIA



Brief Overview on the Fabrication of Light-Emitting Diode (LED) Device via High and Low-Cost Techniques

نظرة عامة موجزة على تصنيع جهاز الدايمود الباعث للضوء (LED) عبر تقنيات عالية ومنخفضة التكلفة

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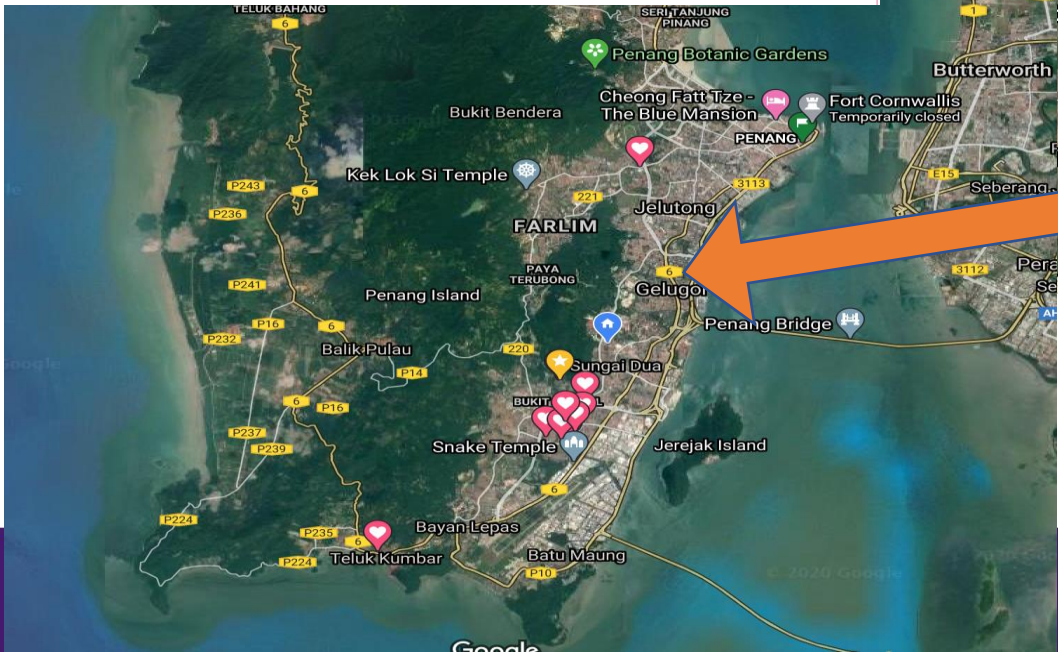
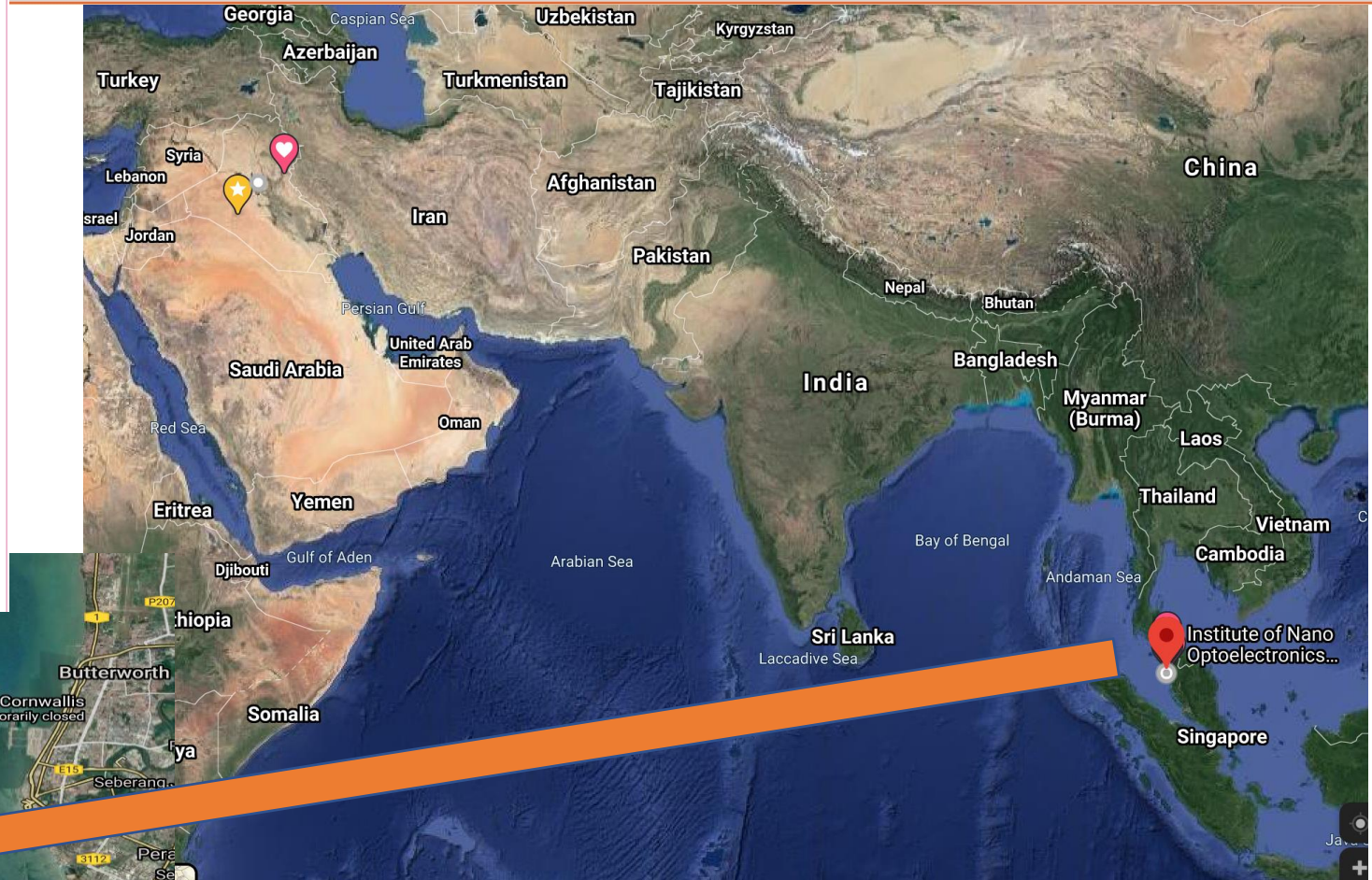
International Scientific Symposium in Physics and E-Learning

Under the auspices of the President of University of Fallujah and the supervision of the Dean of Applied Sciences College

The Department of Medical Physics at the College of Applied Sciences - University of Fallujah, the Department of Physics at the College of Science, the Department of Physics at the College of Science for Women and the Department of



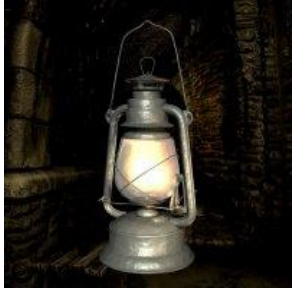
2019 ranking	2018 ranking	2017 ranking	University
=87	=114	=133	Universiti Malaya (UM)
=184	=230	=302	Universiti Kebangsaan Malaysia (UKM)
202	229	270	Universiti Putra Malaysia (UPM)
207	=264	=330	Universiti Sains Malaysia (USM)
228	253	=288	Universiti Teknologi Malaysia
481	-	-	UCSI University
521-530	601-650	601-650	Universiti Teknologi Petronas (Petronas)
601-650	-	-	Taylor's University



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Light emitting diodes (LEDs)

3 traditional Technologies:



Incandescence



• Fluorescence & High Intensity discharge



Common application: Digital clock, battery level indicator, torch



• Traffic signals, street light



• Residential



• Buildings



• Outdoor:
runway in airports

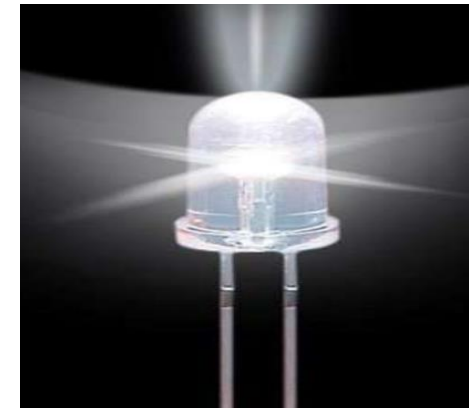
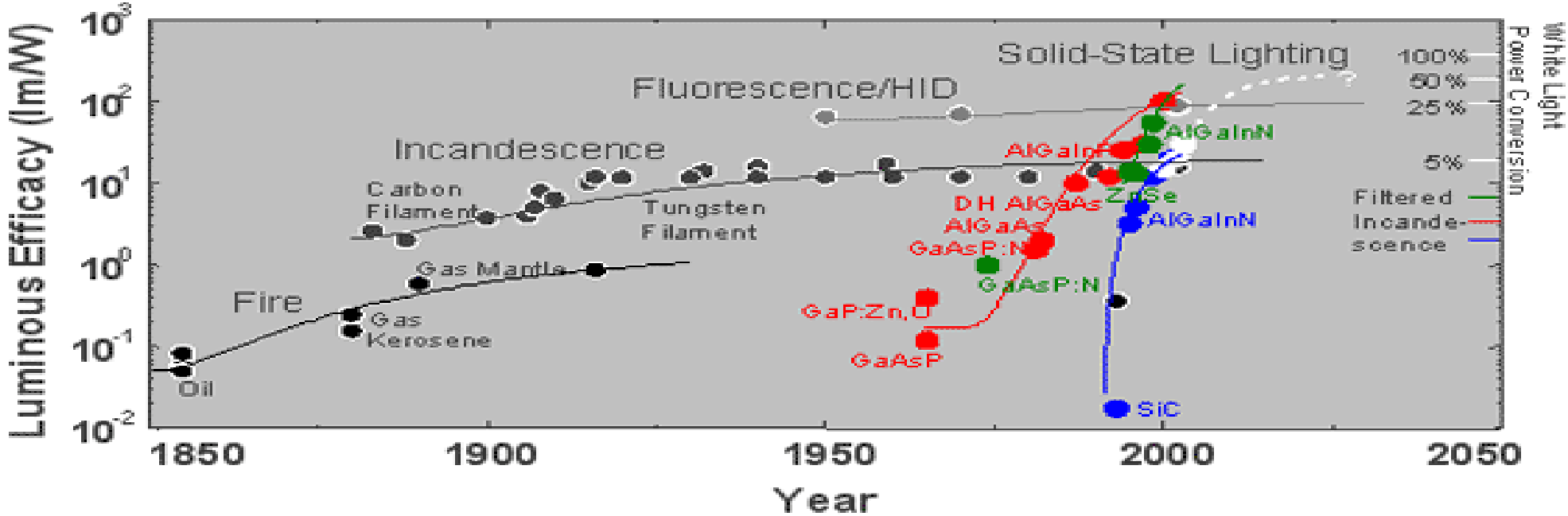


• Information boards





History of Lighting



3 traditional Technologies:

• Fire



Oil lamp

Incandescence



Incandescent bulbs

• Fluorescence & High Intensity discharge



Fluorescent bulbs

Light Emitting Diode

A **light-emitting diode (LED)** is a semiconductor device that emits visible **light** when an electric current passes through it.



History of LEDs

- Henry Joseph Round **Light-emitting diode (LED)**
- 1907: First observation of electroluminescence
- 1907: First LED
- LED was made of SiC, carborundum, an abrasive material

A Note on Carborundum.

To the Editors of *Electrical World*:

SIR:—During an investigation of the unsymmetrical passage of current through a contact of carborundum and other substances a curious phenomenon was noted. On applying a potential of 10 volts between two points on a crystal of carborundum, the crystal gave out a yellowish light. Only one or two specimens could be found which gave a bright glow on such a low voltage, but with 100 volts a large number could be found to glow. In some crystals only edges gave the light and others gave instead of a yellow light green, orange or blue. In all cases tested the glow appears to come from the negative pole, a bright blue-green spark appearing at the positive pole. In a single crystal, if contact is made near the center with the negative pole, and the positive pole is put in contact at any other place, only one section of the crystal will glow and that the same section wherever the positive pole is placed.

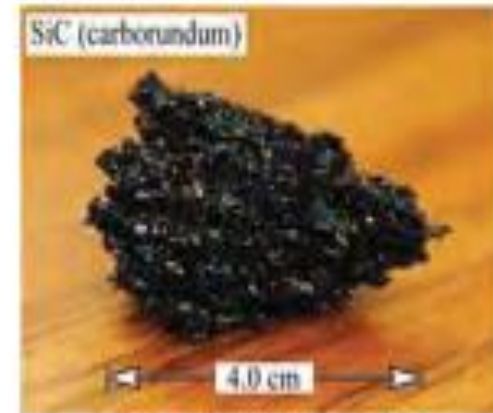
There seems to be some connection between the above effect and the e.m.f. produced by a junction of carborundum and another conductor when heated by a direct or alternating current; but the connection may be only secondary as an obvious explanation of the e.m.f. effect is the thermoelectric one. The writer would be glad of references to any published account of an investigation of this or any allied phenomena.

New York, N. Y.

H. J. ROUND.



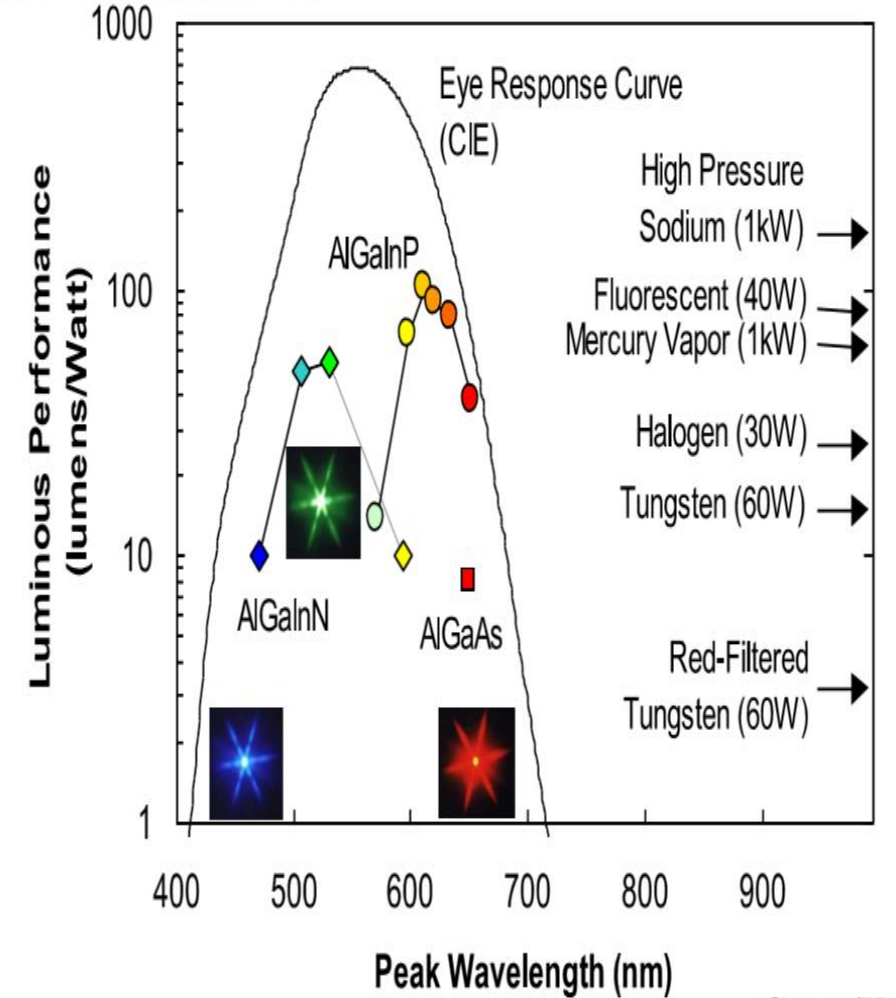
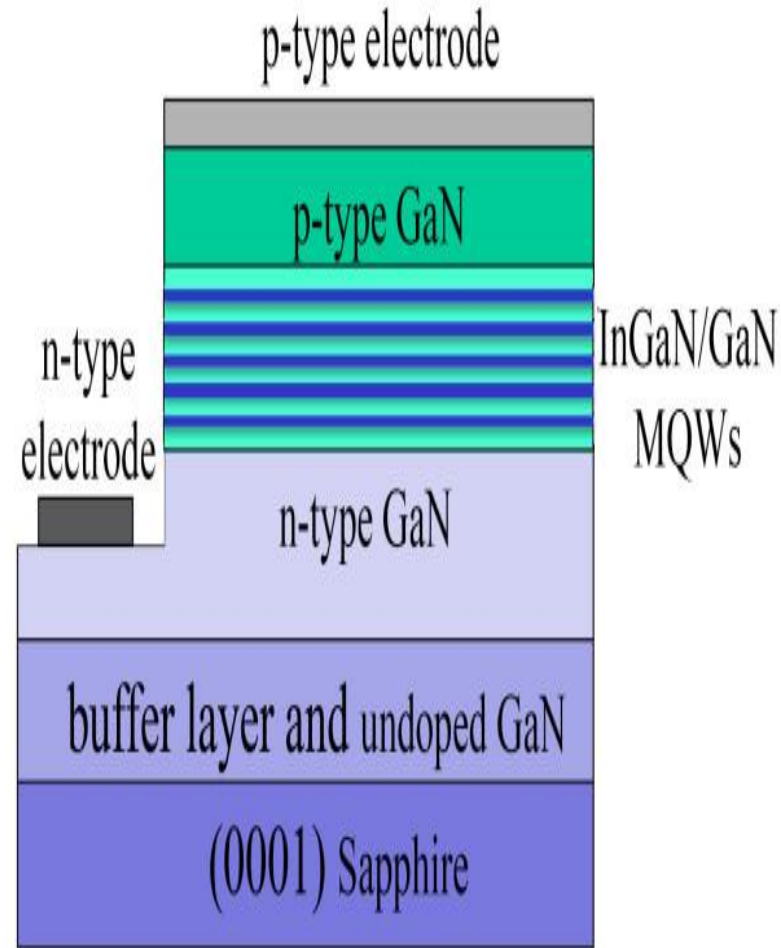
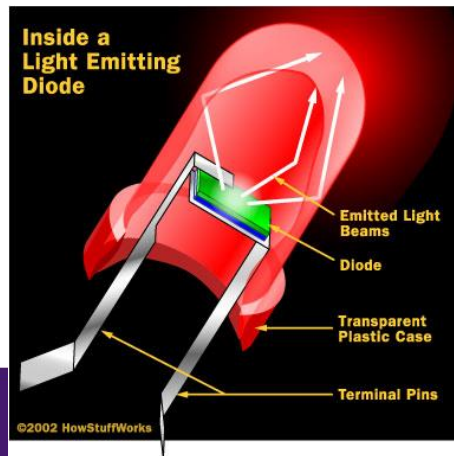
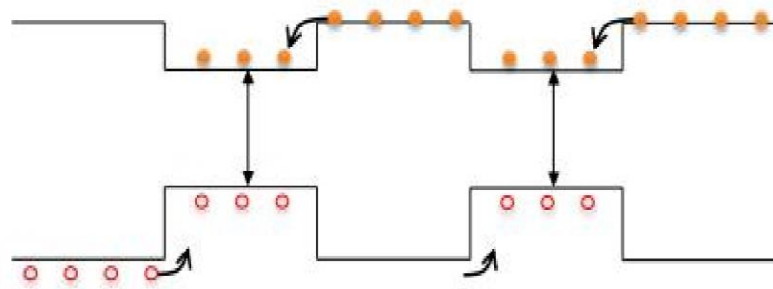
Henry Joseph Round



SiC - Carborundum

www.LightEmittingDiodes.org

Quantum wells are heterostructures in which a thin layer of one semiconductor is sandwiched between two layers of different semiconductor material, thereby forming a heterojunction ---- **To increase in the volume of the active region.**



White LEDs

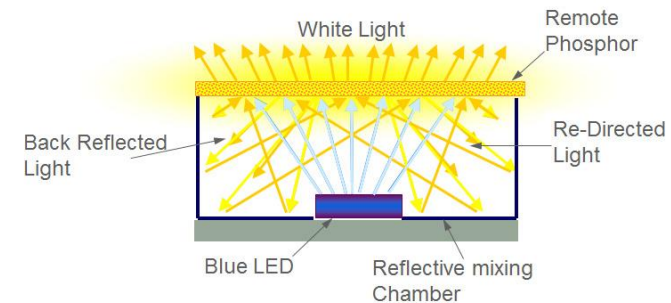
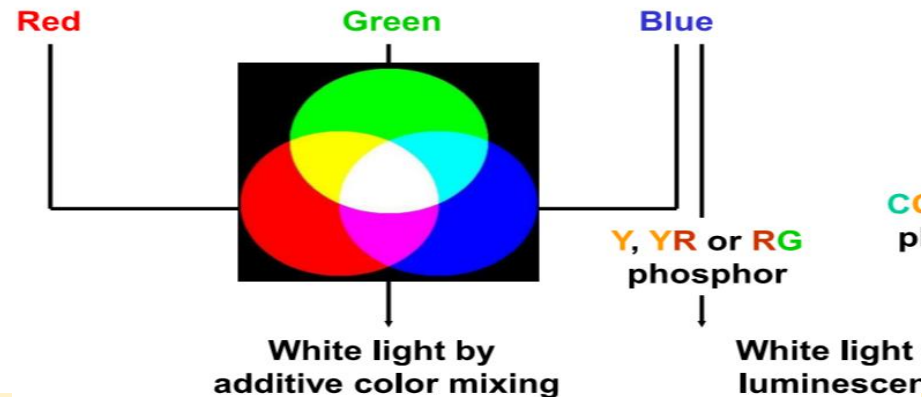
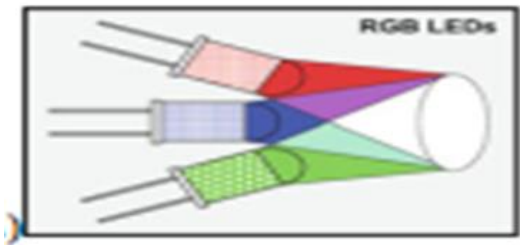
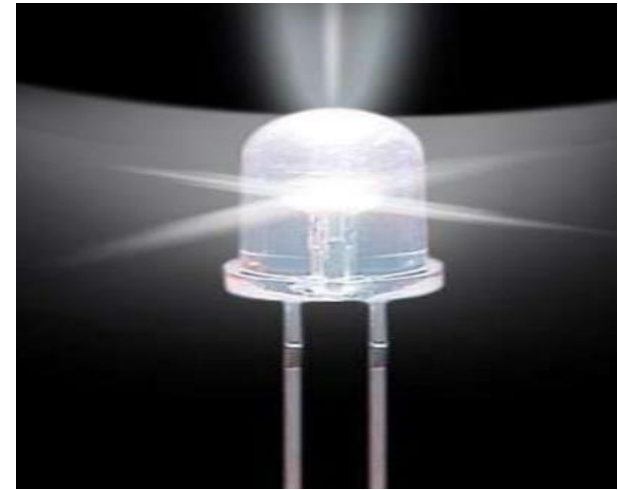
Why wight LEDs?

With 20% of the world's electricity used for lighting, it's been calculated that optimal use of White LED lighting could reduce this to 4%.

The use of a White LED will **reduce the release of CO2** into the atmosphere by a significant amount.

White LEDs are Energy efficient.

Long life (A typical White LED lamp can last for 100,000 hours).



In order to get white light with LEDs, there are usually two options.

- First option is to **combine** red, green and blue LED.
- Second more common, especially due to lower manufacturing price, is white LED (WLED), which is made of **blue LED** and phosphorus material, which emits green-yellow light.

Phosphor-Based White LED Emission Spectrum

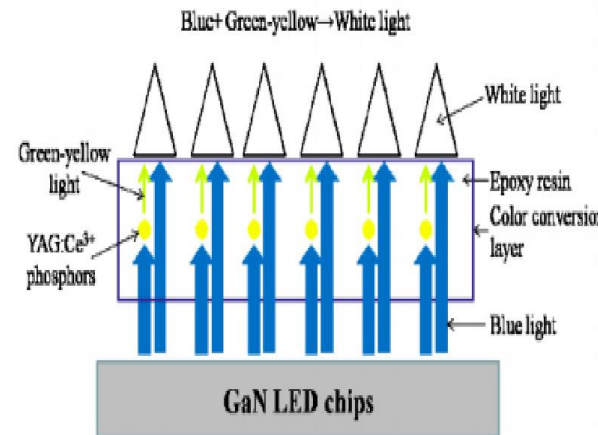
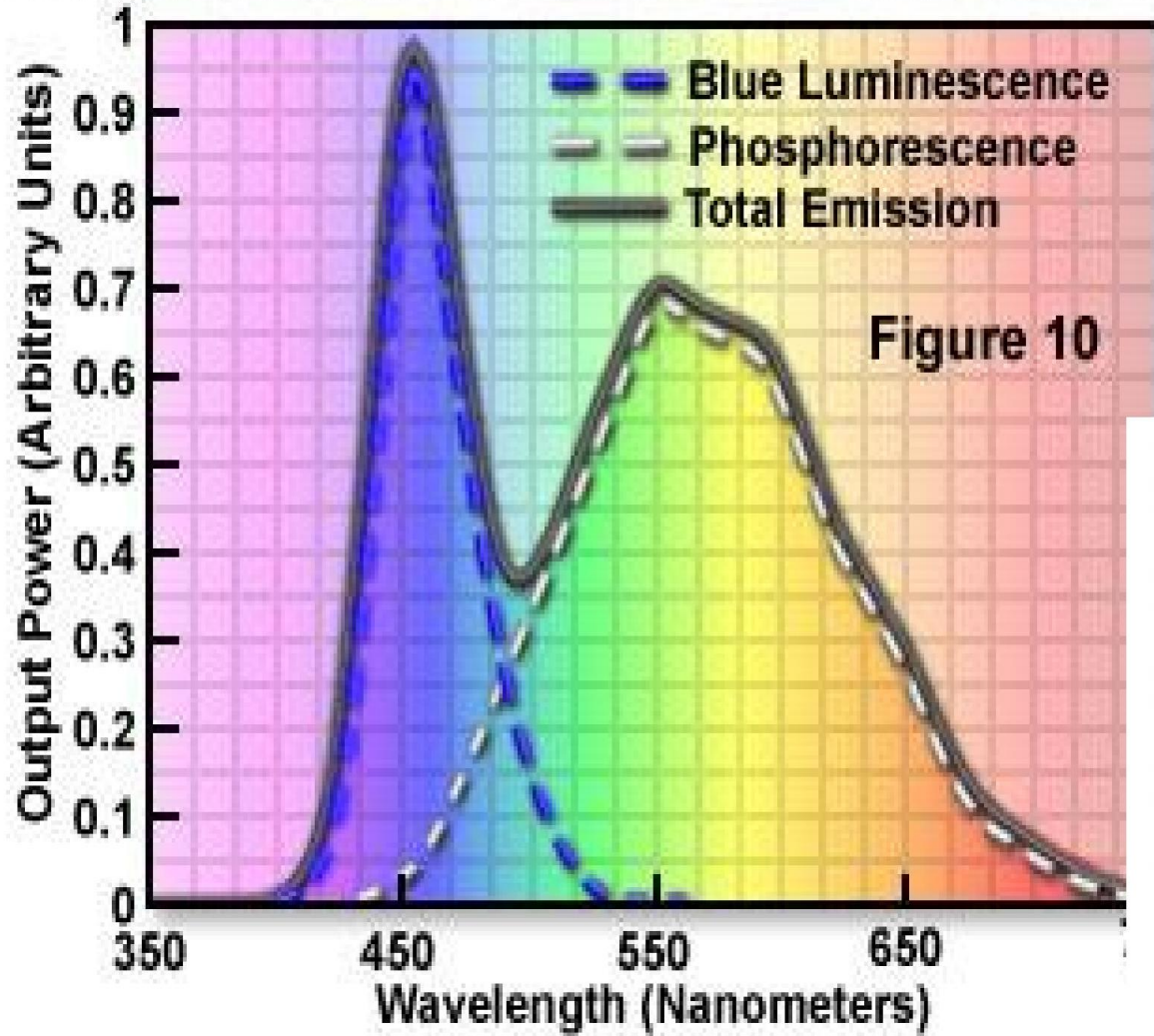


Figure 7: Schematic view of conversion from blue to white light [8].

