

(12) PATENT APPLICATION PUBLICATION

(21) Application No.202311078180 A

(19) INDIA

(22) Date of filing of Application :17/11/2023

(43) Publication Date : 29/12/2023

(54) Title of the invention : LIGHT-EMITTING DIODES USING NANO-PHOTONIC STRUCTURES

(51) International classification :H01L0033480000, H01L0033600000, H01L0023000000, H01L0033460000, H01L0025075000

(86) International Application No :NA
Filing Date :NA

(87) International Publication No : NA

(61) Patent of Addition to Application Number :NA
Filing Date :NA

(62) Divisional to Application Number :NA
Filing Date :NA

(71)Name of Applicant :

1)Noida Institute of Engineering and Technology

Address of Applicant :19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306, India Greater Noida ---

Name of Applicant : NA

Address of Applicant : NA

(72)Name of Inventor :

1)Dr. Raman Batra

Address of Applicant :19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306, India Greater Noida -----

2)Rishi Singhal

Address of Applicant :EN department, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306, India Greater Noida -----

3)Ranjan Kumar

Address of Applicant :ECE department, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306, India Greater Noida -----

4)Dr. Prasanna Kumar Singh

Address of Applicant :ECE department, 19, Institutional Area, Knowledge Park II, Greater Noida, Uttar Pradesh – 201306, India Greater Noida -----

(57) Abstract :

Accordingly, embodiments herein disclose development of high-efficiency light-emitting diodes (LEDs) by incorporating nano-photonics structures that enhance light extraction, improve color uniformity, and increase overall device efficiency. The present invention includes a metallic substrate having a top surface, a mirrored surface on at least a portion of the top surface of the metallic substrate, and a plurality of light emitter devices mounted on the top surface of the metallic substrate or the mirrored surface. Further, the present invention may include one or more electrical components mounted on the at least two non-metallic layers and electrically coupled to the one or more light emitter devices by one or more wire bonds directly connected between the one or more electrical components and the light emitter devices. The electrical components are spaced from the metallic substrate by the at least two non-metallic layers.

No. of Pages : 10 No. of Claims : 4