(54) Title: OPTICAL SYSTEM USING LED COUPLED WITH PHOSPHOR-DOPED REFLECTIVE MATERIALS

(57) Abstract: To improve semiconductor-based systems for generating white light, a phosphor is integrated into a reflective material of an external structure. A disclosed exemplary system, for luminance or illumination applications, utilizes an energy source package, for emitting radiant energy of a first wavelength. The package typically contains an LED or other semiconductor device. A reflector outside the package has a reflective surface arranged to receive radiant energy from the energy source. At least some of the received radiant energy of the first wavelength excites one or more phosphors doped within the reflector to emit visible light, including visible light energy of at least one second wavelength different from the first wavelength. At least some of visible light emitted by the phosphor is reflected by the reflective surface of the reflector and directed to facilitate the particular humanly perceptible luminance or illumination application.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
   IPC: F21V 9/00(2006.01)
   USPC: 362/231
   According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
   Minimum documentation searched (classification system followed by classification symbols)
   U.S. : 362/231, 84, 230, 260

   Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
   NONE

   Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
   Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 5,757,111 A (SATO) 26 May 1998 (26.05.1998) see entire document.</td>
<td>1, 5, 6</td>
</tr>
<tr>
<td>A</td>
<td>US 6,234,648 B1 (BORNER et al) 22 May 2001 (22.05.2001) see entire document.</td>
<td>1-34</td>
</tr>
<tr>
<td>A</td>
<td>US 5,803,592 A (LAWSON) 08 September 1998 (08.09.1998) see entire document.</td>
<td>1-34</td>
</tr>
<tr>
<td>A</td>
<td>US 5,548,493 A (YOUNG) 20 August 2004 (20.08.2004) see entire document.</td>
<td>1-34</td>
</tr>
<tr>
<td>A</td>
<td>document.</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>JP 200321126 A (OKUBO et al) 14 May 1999 (14.05.1999) see entire document.</td>
<td>1-34</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

See patent family annex.

Date of the actual completion of the international search
29 June 2006 (29.06.2006)

Date of mailing of the international search report
28 JUL 2006

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (571) 273-3201

Authorized officer
Josu Dees
Telephone No. 571-272-1569

Form PCT/ISA/210 (second sheet) (April 2005)
Continuation of B. FIELDS SEARCHED Item 3:
EAST; US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM TDB; (phosphoresc$4 or phosphor or fluorescent or dye or luminesc$4) and (integrat$3 near5 (cavity or sphere or spherical)).