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(54) **Fluorescent lamp comprising a protective film, and lighting fixture therewith**

(57) There is provided a fluorescent lamp (10) comprising a glass tube (1) filled therein with an electric discharging medium, a protective film (4) formed on an inner surface of the glass tube, a phosphor layer (5) formed on an upper surface of the protective film, and electrode means (3) attached to the glass tube. The protective film comprises, as a major component, SiO₂ fine particles exhibiting not more than 0.3 at a temperature of 600°C in integrated value of absorbance spectrum of hydroxyl group absorption band in wave number ranging from 2500-3800 cm⁻¹ as measured by infrared spectroscopy on the assumption that the integrated value of absorb-

ance spectrum of hydroxyl group absorption band at a temperature of 100°C is 1.

Alternatively, the SiO₂ fine particles contain carbon at a content confined within the range of 0.09% to 0.3% by mass.

Alternatively, the SiO₂ fine particles exhibit a spectrum having peaks at a wave number ranging from 590 to 610 cm⁻¹ and at a wave number ranging from 490 to 500 cm⁻¹ as measured by laser Raman spectroscopy and at a temperature of 700°C.

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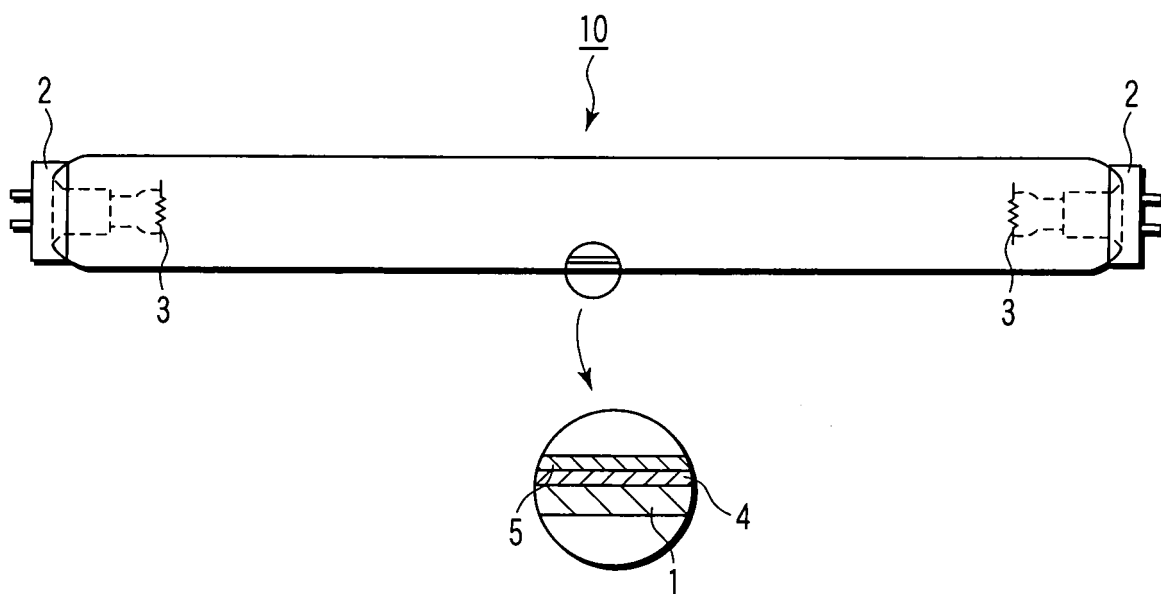


FIG. 1



EUROPEAN SEARCH REPORT

Application Number
EP 06 25 6403

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
E	EP 1 734 563 A2 (TOSHIBA LIGHTING & TECHNOLOGY [JP]) 20 December 2006 (2006-12-20) * paragraphs [0019], [0035] - [0048]; figures 1, 2 *	1,4,5,8	INV. H01J61/35 H01J61/72
Y	US 4 923 425 A (FORD CHERYL A [US]) 8 May 1990 (1990-05-08) * the whole document *	1,4,8	
Y	Miclea, Paul-Tiberiu: "Formation and characterization of metal nanoparticle coatings on oxide nanospheres; PhD thesis", 24 June 2002 (2002-06-24), pages FP, I,83-86, XP002676241, Martin-Luther-Universität Halle-Wittenberg Retrieved from the Internet: URL:http://sundoc.bibliothek.uni-halle.de/diss-online/02/02H132/index.htm [retrieved on 2012-05-21] * page 83 *	1,4,8	
A	JP 2002 251983 A (HARISON TOSHIBA LIGHTING CORP) 6 September 2002 (2002-09-06) * abstract * * paragraphs [0008] - [0014], [0070] *	1	
A,D	JP 2000 113856 A (MATSUSHITA ELECTRIC WORKS LTD) 21 April 2000 (2000-04-21) * the whole document *	1-8	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 May 2012	Examiner Schmidt-Kärst, S
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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21-05-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1734563	A2	20-12-2006	CN 1881525 A 20-12-2006
			EP 1734563 A2 20-12-2006
			US 2006284561 A1 21-12-2006

US 4923425	A	08-05-1990	NONE

JP 2002251983	A	06-09-2002	NONE

JP 2000113856	A	21-04-2000	JP 3603617 B2 22-12-2004
			JP 2000113856 A 21-04-2000

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82