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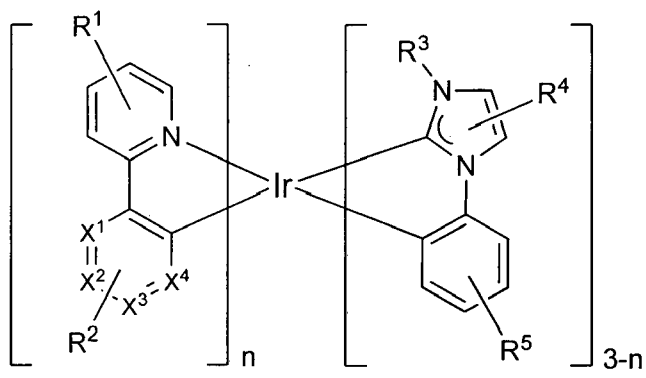
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(54) **Organic electroluminescent materials and devices**

(57) A compound having the formula $\text{Ir}(\text{L}_\text{A})_n(\text{L}_\text{B})_{3-n}$, having the structure:



Formula I, is described. In formula $\text{Ir}(\text{L}_\text{A})_n(\text{L}_\text{B})_{3-n}$, n is either 1 or 2; R^1 , R^2 , R^4 , and R^5 each independently represent up to the maximum number of substitutions or no substitutions; X^1 , X^2 , X^3 , and X^4 are each independently C or N; and at least one of X^1 , X^2 , X^3 , and X^4 is N. In addition, any adjacent substituents of R^1 , R^2 , R^3 , R^4 , and R^5 are optionally linked together to form a ring, and each R^1 , R^2 , R^3 , R^4 , and R^5 is independently selected from hydrogen, deuterium, halide, alkyl, cycloalkyl, heteroalkyl, arylalkyl, alkoxy, aryloxy, amino, silyl, alkenyl, cycloalkenyl, heteroalkenyl, alkynyl, aryl, heteroaryl, acyl, carbonyl, carboxylic acids, ester, nitrile, isonitrile, sulfanyl, sulfinyl, sulfonyl, phosphino, and combinations thereof. Formulations and devices, such as an OLEDs, that include the compound of formula $\text{Ir}(\text{L}_\text{A})_n(\text{L}_\text{B})_{3-n}$ are also described.

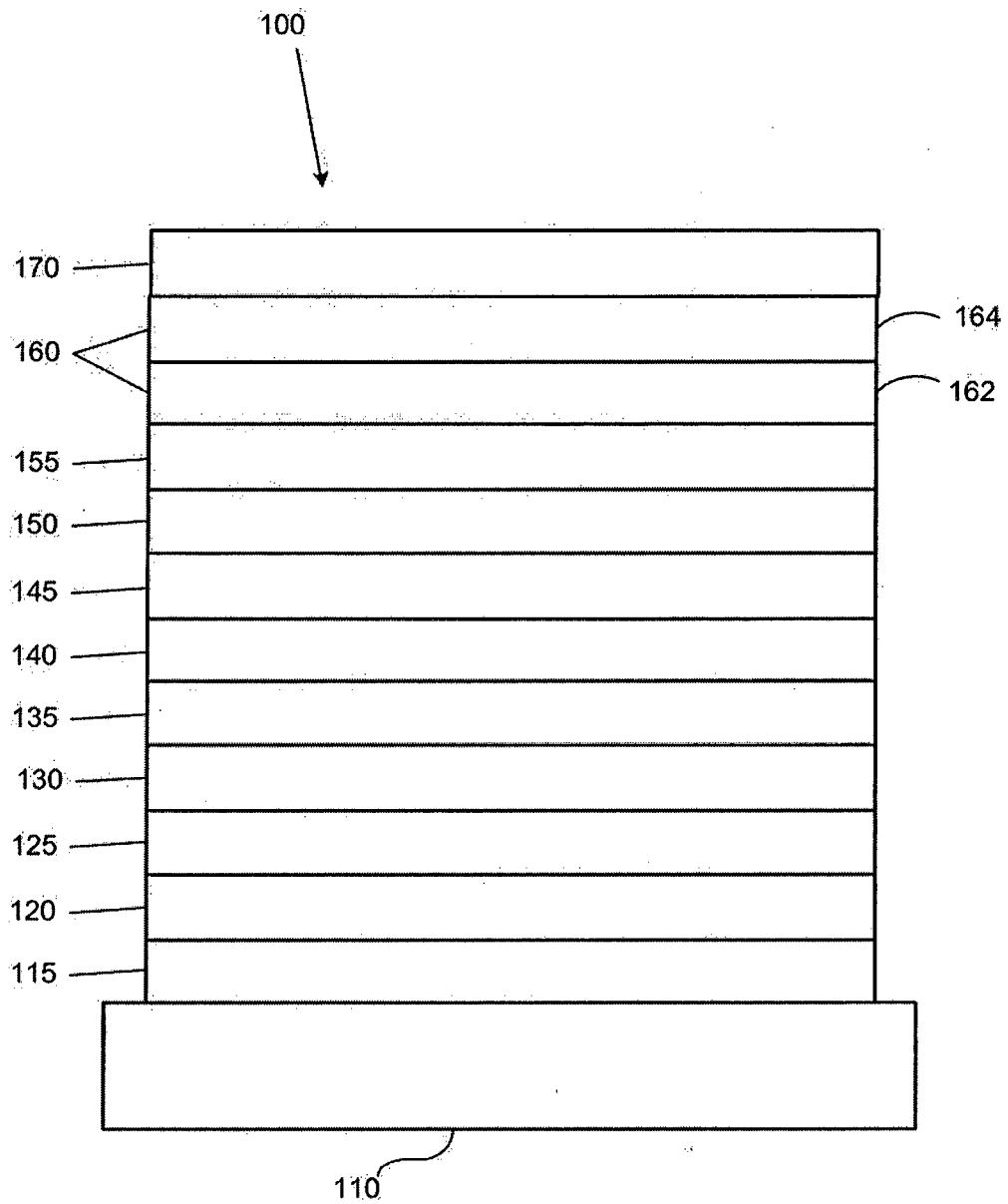


FIGURE 1



EUROPEAN SEARCH REPORT

Application Number
EP 14 00 3725

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2005/260441 A1 (THOMPSON MARK E [US] ET AL) 24 November 2005 (2005-11-24) * paragraph [0161] - paragraph [0164]; figures 4-10; examples 5,5 * * paragraphs [0038] - [0063]; claims 1-7,10-22; figures 1,2 *	1-15	INV. H01L51/54 H01L51/50
A	US 2005/260448 A1 (LIN CHUN [US] ET AL) 24 November 2005 (2005-11-24) * paragraphs [0103] - [0120]; claims 1-12; figures 1,2 *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			H01L
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 22 May 2015	Examiner Konráðsson, Ásgeir
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.**

EP 14 00 3725

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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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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005260441 A1	24-11-2005	NONE	
US 2005260448 A1	24-11-2005	NONE	

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

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其他公开文献	EP2874195A2 EP2874195B1		
外部链接	Espacenet		

摘要(译)

描述具有式I的结构式Ir (LA) n (LB) 3-n的化合物。在式Ir (LA) n (LB) 3-n中，n为1或2；R1，R2，R4和R5各自独立地表示最多取代数或不取代；X1，X2，X3和X4各自独立地为C或N；X1，X2，X3和X4中的至少一个是N。此外，R1，R2，R3，R4和R5的任何相邻取代基任选地连接在一起形成环，并且每个R1，R2，R3，R4和R5独立地选自氢，氘，卤化物，烷基，环烷基，杂烷基，芳烷基，烷氧基，芳氧基，氨基，甲基硅烷基，烯基，环烯基，杂烯基，炔基，芳基，杂芳基，酰基，羰基，羧酸，酯，腈，异腈，硫烷基，亚磺酰基，磺酰基，膦基及其组合。还描述了包含式Ir (LA) n (LB) 3-n的化合物的制剂和装置，例如OLED。

