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02786655.7 / 1 442 094

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(72) Inventors:
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(54) **Electroluminescent iridium compounds having red-orange or red emission and devices made with such compounds**

(57) The invention relates to electroluminescent Ir(III) complexes, and active layers and devices comprising the Ir (III) complexes. The complexes have emission maxima in the red-orange to red region of the visible spectrum.

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EUROPEAN SEARCH REPORT

Application Number
EP 08 01 7886

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	LAMANSKY SERGEY ET AL: "Highly phosphorescent bis-cyclometalated iridium complexes: synthesis, photophysical characterization and use in organic light emitting diodes", JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, AMERICAN CHEMICAL SOCIETY, WASHINGTON, DC, US, vol. 123, no. 18, 9 May 2001 (2001-05-09), pages 4304-4312, XP002955894, ISSN: 0002-7863 * the whole document *	1,2,5,8	INV. C09K11/06 H05B33/14
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1 The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	2 December 2010	Lehnert, Andreas

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
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L : document cited for other reasons

& : member of the same patent family, corresponding document

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The present search report has been drawn up for all claims

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 08 01 7886

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-9(partially)

An active layer or an electroluminescent device comprising at least one compound selected from IrL3 and IrL2Z with L corresponding to Formula III as disclosed in claim 1.

1.1. claims: 1-9(partially)

An active layer or an electroluminescent device comprising at least one compound selected from IrL3 and IrL2Z with L corresponding to Formula VIII as disclosed in claim 1.

1.2. claim: 6

A compound of formula 1-c, table 1.

1.3. claim: 6

A compound of formula 1-d, table 1.

1.4. claim: 6

A compound of formula 1-e, table 1.

1.5. claim: 6

A compound of formula 1-i, table 1.

1.6. claim: 6

A compound of formula 1-j, table 1.

1.7. claim: 6

A compound of formula 1-k, table 1.

1.8. claim: 6

A compound of formula 1-m, table 1.

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2. claims: 1-9(partially)

An active layer or an electroluminescent device comprising at least one compound selected from IrL3 and IrL2Z with L corresponding to Formula VII as disclosed in claim 1.

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3. claims: 1-9(partially)

An active layer or an electroluminescent device comprising

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 08 01 7886

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

at least one compound selected from IrL3 and IrL2Z with L corresponding to Formula IX as disclosed in claim 1.

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4. claims: 1-9(partially)

An active layer or an electroluminescent device comprising at least one compound selected from IrL3 and IrL2Z with L corresponding to Formula X as disclosed in claim 1.

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 01 7886

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 01 7886

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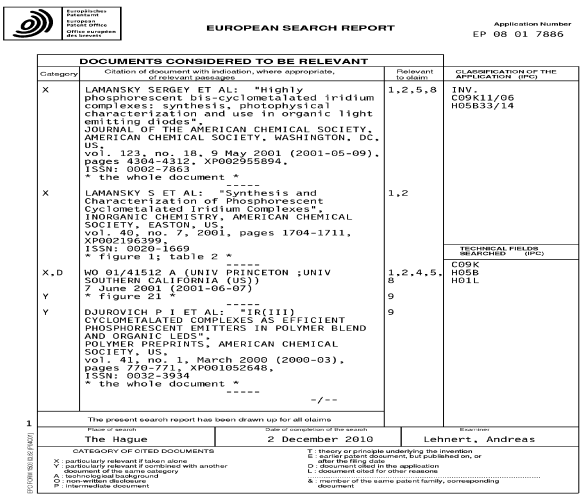
For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	具有红橙色或红色发光的电致发光铱化合物和用这些化合物制成的装置		
公开(公告)号	EP2034000A3	公开(公告)日	2011-01-12
申请号	EP2008017886	申请日	2002-11-04
[标]申请(专利权)人(译)	纳幕尔杜邦公司		
申请(专利权)人(译)	E.I. DUPONT DE NEMOURS AND COMPANY		
当前申请(专利权)人(译)	E.I. DUPONT DE NEMOURS AND COMPANY		
[标]发明人	LOCLOUX DANIEL DAVID PETROV VIACHESLAV WANG YING		
发明人	LOCLOUX, DANIEL DAVID PETROV, VIACHESLAV WANG, YING		
IPC分类号	C09K11/06 H05B33/14 H01L51/50 C07D215/10 C07D217/10 C07D217/16 C07D401/04 C07D409/04 C07F15/00 H01L51/30		
CPC分类号	H01L51/0085 C07D409/04 C07F15/0033 C09K11/06 C09K2211/1007 C09K2211/1011 C09K2211/1029 C09K2211/1092 C09K2211/185 H01L51/0035 H01L51/0036 H01L51/0038 H01L51/0039 H01L51/0042 H01L51/0059 H01L51/0086 H01L51/0094 H01L51/5012 H01L51/5016 H01L51/5048 H05B33/14 Y10S428/917		
代理机构(译)	TOWLER，PHILIP DEAN		
优先权	60/347911 2001-11-07 US		
其他公开文献	EP2034000A2 EP2034000B1		
外部链接	Espacenet		

摘要(译)

本发明涉及电致发光Ir（III）配合物，以及包含Ir（III）配合物的活性层和器件。该配合物在可见光谱的红橙色至红色区域具有发射最大值。



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X	LAMANSKY S ET AL: "Synthesis and Characterization of Phosphorescent Cyclometalated Iridium Complexes", INORGANIC CHEMISTRY, AMERICAN CHEMICAL SOCIETY, EASTON, US, vol. 40, no. 7, 2001, pages 1704-1711, XP002196399, ISSN: 0020-1669 * figure 1; table 2 *	1,2	
X,D	WO 01/41512 A (UNIV PRINCETON ;UNIV SOUTHERN CALIFORNIA (US)) 7 June 2001 (2001-06-07)	1,2,4,5,8	TECHNICAL FIELDS SEARCHED (IPC) C09K H05B H01L
Y	* figure 21 *	9	
Y	DJUROVICH P I ET AL: "IR(III) CYCLOMETALATED COMPLEXES AS EFFICIENT PHOSPHORESCENT EMITTERS IN POLYMER BLEND AND ORGANIC LEDS", POLYMER PREPRINTS, AMERICAN CHEMICAL SOCIETY, US, vol. 41, no. 1, March 2000 (2000-03), pages 770-771, XP001052648, ISSN: 0032-3934 * the whole document *	9	

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