

# CPC COOPERATIVE PATENT CLASSIFICATION

## H ELECTRICITY

(NOTE omitted)

## H10 SEMICONDUCTOR DEVICES; ELECTRIC SOLID-STATE DEVICES NOT OTHERWISE PROVIDED FOR

## H10K ORGANIC ELECTRIC SOLID-STATE DEVICES

### NOTES

1. This subclass covers:
  - individual organic electric solid-state devices, i.e. electric solid-state devices comprising organic material in the active part;
  - integrated devices, or assemblies of multiple devices, comprising such elements.
2. This subclass does not cover:
  - organic electronic memory devices, which are covered by subclass [H10B](#);
  - organic thermoelectric devices, organic thermomagnetic devices, organic piezoelectric devices, organic electrostrictive devices, organic magnetostrictive devices, organic galvanomagnetic devices, organic Hall-effect devices, organic superconducting devices or organic solid-state devices having no potential barriers, and specially adapted for rectifying, amplifying, oscillating or switching, which are covered by subclass [H10N](#);
  - organic resistors having no potential barriers and not specially adapted for integrated devices, which are covered by subclass [H01C](#);
  - organic capacitors having no potential barriers and not specially adapted for integrated devices, which are covered by subclass [H01G](#).
3. In this subclass, the periodic system used is the I to VIII group system indicated in the Periodic Table under Note (3) of section [C](#).
4. In this subclass, it is desirable to add the indexing codes of groups [{H10K 2101/00 - H10K 2102/00}](#).

### Organic devices specially adapted for rectifying, amplifying, oscillating or switching

**10/00**    **Organic devices specially adapted for rectifying, amplifying, oscillating or switching; Organic capacitors or resistors having potential barriers (integrated devices or assemblies of multiple devices [H10K 19/00](#))**

#### WARNING

Group [H10K 10/00](#) is impacted by reclassification into groups [H10K 10/10](#), [H10K 10/40](#) and [H10K 10/43](#).

All groups listed in this Warning should be considered in order to perform a complete search.

**10/10**    • Organic capacitors or resistors having potential barriers

#### WARNING

Group [H10K 10/10](#) is incomplete pending reclassification of documents from group [H10K 10/00](#).

Groups [H10K 10/00](#) and [H10K 10/10](#) should be considered in order to perform a complete search.

**10/20**    • Organic diodes

**10/23**    • • Schottky diodes

**10/26**    • • Diodes comprising organic-organic junctions

**10/29**    • • Diodes comprising organic-inorganic heterojunctions

**10/40**    • Organic transistors

#### WARNING

Groups [H10K 10/40](#) and [H10K 10/43](#) are incomplete pending reclassification of documents from group [H10K 10/00](#).

Groups [H10K 10/00](#), [H10K 10/40](#) and [H10K 10/43](#) should be considered in order to perform a complete search.

**10/43**    • • Bipolar transistors, e.g. organic bipolar junction transistors [OBJT]

**10/46**    • • Field-effect transistors, e.g. organic thin-film transistors [OTFT] ([H10K 10/43 takes precedence](#))

**10/462**    • • • {Insulated gate field-effect transistors [IGFETs]}

**10/464**    • • • • {Lateral top-gate IGFETs comprising only a single gate}

**10/466**    • • • • {Lateral bottom-gate IGFETs comprising only a single gate}

**10/468**    • • • • {characterised by the gate dielectrics}

**10/471**    • • • • • {the gate dielectric comprising only organic materials}

**10/472**    • • • • • {the gate dielectric comprising only inorganic materials}

**10/474**    • • • • • {the gate dielectric comprising a multilayered structure}

**10/476**    • • • • • • {comprising at least one organic layer and at least one inorganic layer}

10/478	. . . . . {the gate dielectric comprising a layer of composite material comprising interpenetrating or embedded materials, e.g. TiO <sub>2</sub> particles in a polymer matrix}	19/00	<b>Integrated devices, or assemblies of multiple devices, comprising at least one organic element specially adapted for rectifying, amplifying, oscillating or switching, covered by group <a href="#">H10K 10/00</a></b>
10/481	. . . . . {characterised by the gate conductors}		
10/482	. . . . . {the IGFET comprising multiple separately-addressable gate electrodes}		<b><u>WARNING</u></b>
10/484	. . . . . {characterised by the channel regions}		Group <a href="#">H10K 19/00</a> is incomplete pending reclassification of documents from group <a href="#">H01L 25/18</a> . Groups <a href="#">H01L 25/18</a> and <a href="#">H10K 19/00</a> should be considered in order to perform a complete search.
10/486	. . . . . {the channel region comprising two or more active layers, e.g. forming pn heterojunctions}		Group <a href="#">H10K 19/00</a> is also impacted by reclassification into group <a href="#">H10K 19/80</a> .
10/488	. . . . . {the channel region comprising a layer of composite material having interpenetrating or embedded materials, e.g. a mixture of donor and acceptor moieties, that form a bulk heterojunction}		Groups <a href="#">H10K 19/00</a> and <a href="#">H10K 19/80</a> should be considered in order to perform a complete search.
10/491	. . . . . {Vertical transistors, e.g. vertical carbon nanotube field effect transistors [CNT-FETs]}	19/10	. comprising field-effect transistors
10/50	. Bistable switching devices	19/20	. comprising components having an active region that includes an inorganic semiconductor
10/701	. {Organic molecular electronic devices}	19/201	. {Integrated devices having a three-dimensional layout, e.g. 3D ICs}
10/80	. Constructional details		<b><u>WARNING</u></b>
	<b><u>WARNING</u></b>		Group <a href="#">H10K 19/201</a> is impacted by reclassification into groups <a href="#">H10K 39/401</a> and <a href="#">H10K 59/751</a> .
	Group <a href="#">H10K 10/80</a> is impacted by reclassification into group <a href="#">H10K 77/00</a> .		Groups <a href="#">H10K 19/201</a> , <a href="#">H10K 39/401</a> and <a href="#">H10K 59/751</a> should be considered in order to perform a complete search.
	Groups <a href="#">H10K 10/80</a> and <a href="#">H10K 77/00</a> should be considered in order to perform a complete search.		
10/82	. . Electrodes	19/202	. {Integrated devices comprising a common active layer}
	<b><u>WARNING</u></b>		<b><u>WARNING</u></b>
	Group <a href="#">H10K 10/82</a> is impacted by reclassification into group <a href="#">H10K 10/86</a> .		Group <a href="#">H10K 19/202</a> is impacted by reclassification into groups <a href="#">H10K 39/501</a> and <a href="#">H10K 59/771</a> .
	Groups <a href="#">H10K 10/82</a> and <a href="#">H10K 10/86</a> should be considered in order to perform a complete search.		Groups <a href="#">H10K 19/202</a> , <a href="#">H10K 39/501</a> and <a href="#">H10K 59/771</a> should be considered in order to perform a complete search.
10/84	. . . Ohmic electrodes, e.g. source or drain electrodes		
10/86	. . . Schottky electrodes	19/80	. Interconnections, e.g. terminals
	<b><u>WARNING</u></b>		<b><u>WARNING</u></b>
	Group <a href="#">H10K 10/86</a> is incomplete pending reclassification of documents from group <a href="#">H10K 10/82</a> .		Group <a href="#">H10K 19/80</a> is incomplete pending reclassification of documents from group <a href="#">H10K 19/00</a> .
	Groups <a href="#">H10K 10/82</a> and <a href="#">H10K 10/86</a> should be considered in order to perform a complete search.		Groups <a href="#">H10K 19/00</a> and <a href="#">H10K 19/80</a> should be considered in order to perform a complete search.
10/88	. . Passivation; Containers; Encapsulations	19/901	. {Assemblies of multiple devices comprising at least one organic element specially adapted for rectifying, amplifying, oscillating or switching}

**Organic radiation-sensitive devices**

- 30/00**    **Organic devices sensitive to infrared radiation, light, electromagnetic radiation of shorter wavelength or corpuscular radiation (integrated devices or assemblies of multiple devices [H10K 39/00](#), [H10K 65/00](#); electrolytic light-sensitive devices [H01G 9/20](#))**

**NOTE**

This group covers organic semiconductor devices sensitive to radiation insofar as these devices are specially adapted for either:

- the conversion of the radiation energy into electrical energy; or
- the control of electrical energy by such radiation.

**WARNING**

Group [H10K 30/00](#) is impacted by reclassification into groups [H10K 30/50](#), [H10K 30/53](#) and [H10K 30/60](#).

Groups [H10K 30/00](#), [H10K 30/50](#), [H10K 30/53](#) and [H10K 30/60](#) should be considered in order to perform a complete search.

- 30/10**    • comprising heterojunctions between organic semiconductors and inorganic semiconductors

**WARNING**

Group [H10K 30/10](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/10](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/15**    • • Sensitised wide-bandgap semiconductor devices, e.g. dye-sensitised TiO<sub>2</sub> (photo-electrochemical devices comprising a liquid electrolyte or a solid electrolyte [H01G 9/20](#))

**WARNING**

Group [H10K 30/15](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/15](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/151**    • • • {the wide bandgap semiconductor comprising titanium oxide, e.g. TiO<sub>2</sub>}

**WARNING**

Group [H10K 30/151](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/151](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/152**    • • • {the wide bandgap semiconductor comprising zinc oxide, e.g. ZnO}

**WARNING**

Group [H10K 30/152](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/152](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/20**    • comprising organic-organic junctions, e.g. donor-acceptor junctions

**WARNING**

Group [H10K 30/20](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/20](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/211**    • • {comprising multiple junctions, e.g. double heterojunctions}

**WARNING**

Group [H10K 30/211](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/211](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/30**    • comprising bulk heterojunctions, e.g. interpenetrating networks of donor and acceptor material domains

**WARNING**

Group [H10K 30/30](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/30](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/35**    • • comprising inorganic nanostructures, e.g. CdSe nanoparticles

**WARNING**

Group [H10K 30/35](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/35](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/352 . . . {the inorganic nanostructures being nanotubes or nanowires, e.g. CdTe nanotubes in P3HT polymer}

**WARNING**

Group [H10K 30/352](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/352](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/353 . . {comprising blocking layers, e.g. exciton blocking layers}

**WARNING**

Group [H10K 30/353](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/353](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/354 . {comprising a metal-insulator-semiconductor [m-i-s] structure}

**WARNING**

Group [H10K 30/354](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/354](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/40 . comprising a p-i-n structure, e.g. having a perovskite absorber between p-type and n-type charge transport layers

**WARNING**

Group [H10K 30/40](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/40](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/451 . {comprising a metal-semiconductor-metal [m-s-m] structure}

**WARNING**

Group [H10K 30/451](#) is impacted by reclassification into groups [H10K 30/50](#) and [H10K 30/53](#).

Groups [H10K 30/451](#), [H10K 30/50](#) and [H10K 30/53](#) should be considered in order to perform a complete search.

- 30/50 . Photovoltaic [PV] devices

**WARNING**

Groups [H10K 30/50](#) and [H10K 30/53](#) are incomplete pending reclassification of documents from groups [H10K 30/00](#), [H10K 30/10](#), [H10K 30/15](#), [H10K 30/151](#), [H10K 30/152](#), [H10K 30/20](#), [H10K 30/211](#), [H10K 30/30](#), [H10K 30/35](#), [H10K 30/352](#), [H10K 30/353](#), [H10K 30/354](#), [H10K 30/40](#) and [H10K 30/451](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 30/53 . . in the form of fibres or tubes, e.g. photovoltaic fibres

- 30/57 . . comprising multiple junctions, e.g. tandem PV cells

- 30/60 . in which radiation controls flow of current through the devices, e.g. photoresistors

**WARNING**

Group [H10K 30/60](#) is incomplete pending reclassification of documents from group [H10K 30/00](#).

Groups [H10K 30/00](#) and [H10K 30/60](#) should be considered in order to perform a complete search.

- 30/65 . . Light-sensitive field-effect devices, e.g. phototransistors

- 30/671 . {Organic radiation-sensitive molecular electronic devices}

**WARNING**

Group [H10K 30/671](#) is impacted by reclassification into group [H10K 50/401](#).

Groups [H10K 30/671](#) and [H10K 50/401](#) should be considered in order to perform a complete search.

- 30/80 . Constructional details

**WARNING**

Group [H10K 30/80](#) is impacted by reclassification into groups [H10K 30/84](#) - [H10K 30/86](#), [H10K 30/89](#) and [H10K 77/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 30/81 . . Electrodes

- 30/82 . . . Transparent electrodes, e.g. indium tin oxide [ITO] electrodes

- 30/821 . . . . {comprising carbon nanotubes}

- 30/83 . . . . comprising arrangements for extracting the current from the cell, e.g. metal finger grid systems to reduce the serial resistance of transparent electrodes

- 30/84 . . Layers having high charge carrier mobility

#### **WARNING**

Groups [H10K 30/84](#) - [H10K 30/86](#) are incomplete pending reclassification of documents from group [H10K 30/80](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 30/85 . . . Layers having high electron mobility, e.g. electron-transporting layers or hole-blocking layers
- 30/86 . . . Layers having high hole mobility, e.g. hole-transporting layers or electron-blocking layers
- 30/865 . . {Intermediate layers comprising a mixture of materials of the adjoining active layers}
- 30/87 . . Light-trapping means
- 30/88 . . Passivation; Containers; Encapsulations
- 30/89 . . Terminals, e.g. bond pads

#### **WARNING**

Group [H10K 30/89](#) is incomplete pending reclassification of documents from group [H10K 30/80](#).

Groups [H10K 30/80](#) and [H10K 30/89](#) should be considered in order to perform a complete search.

- 39/00 Integrated devices, or assemblies of multiple devices, comprising at least one organic radiation-sensitive element covered by group [H10K 30/00](#)**

#### **NOTE**

This group only covers devices that are sensitive to infrared radiation, light, electromagnetic radiation of shorter wavelength or corpuscular radiation.

- 39/10 . Organic photovoltaic [PV] modules; Arrays of single organic PV cells

#### **WARNING**

Group [H10K 39/10](#) is incomplete pending reclassification of documents from groups [H01L 25/065](#), [H01L 25/0652](#), [H01L 25/0655](#), [H01L 25/0657](#), [H01L 25/16](#), [H01L 25/162](#), [H01L 25/165](#), [H01L 25/167](#), [H01L 25/18](#) and [H10K 39/601](#).

All groups listed in this Warning should be considered in order to perform a complete search.

Group [H10K 39/10](#) is also impacted by reclassification into groups [H10K 39/12](#), [H10K 39/15](#) and [H10K 39/18](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 39/12 . . Electrical configurations of PV cells, e.g. series connections or parallel connections

#### **WARNING**

Group [H10K 39/12](#) is incomplete pending reclassification of documents from groups [H01L 25/065](#), [H01L 25/0652](#), [H01L 25/0655](#), [H01L 25/0657](#), [H01L 25/16](#), [H01L 25/162](#), [H01L 25/165](#), [H01L 25/167](#), [H01L 25/18](#), [H10K 39/10](#) and [H10K 39/601](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 39/15 . . comprising both organic PV cells and inorganic PV cells

#### **WARNING**

Group [H10K 39/15](#) is incomplete pending reclassification of documents from groups [H01L 25/065](#), [H01L 25/0652](#), [H01L 25/0655](#), [H01L 25/0657](#), [H01L 25/16](#), [H01L 25/162](#), [H01L 25/165](#), [H01L 25/167](#), [H01L 25/18](#), [H10K 39/10](#) and [H10K 39/601](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 39/18 . . Interconnections, e.g. terminals

#### **WARNING**

Group [H10K 39/18](#) is incomplete pending reclassification of documents from groups [H01L 25/065](#), [H01L 25/0652](#), [H01L 25/0655](#), [H01L 25/0657](#), [H01L 25/16](#), [H01L 25/162](#), [H01L 25/165](#), [H01L 25/167](#), [H01L 25/18](#), [H10K 39/10](#) and [H10K 39/601](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 39/30 . Devices controlled by radiation

#### **WARNING**

Group [H10K 39/30](#) is impacted by reclassification into group [H10K 39/38](#).

Groups [H10K 39/30](#) and [H10K 39/38](#) should be considered in order to perform a complete search.

- 39/32 . . Organic image sensors

- 39/34 . . . integrated with organic light-emitting diodes [OLED]

#### **WARNING**

Group [H10K 39/34](#) is incomplete pending reclassification of documents from group [H10K 59/65](#).

Groups [H10K 59/65](#) and [H10K 39/34](#) should be considered in order to perform a complete search.

- 39/36 . . Devices specially adapted for detecting X-ray radiation

- 39/38 . . Interconnections, e.g. terminals

**WARNING**

Group [H10K 39/38](#) is incomplete pending reclassification of documents from group [H10K 39/30](#).

Groups [H10K 39/30](#) and [H10K 39/38](#) should be considered in order to perform a complete search.

- 39/401 . {Integrated devices having a three-dimensional layout, e.g. 3D ICs}

**WARNING**

Group [H10K 39/401](#) is incomplete pending reclassification of documents from group [H10K 19/201](#).

Groups [H10K 19/201](#) and [H10K 39/401](#) should be considered in order to perform a complete search.

- 39/501 . {Integrated devices comprising a common active layer}

**WARNING**

Group [H10K 39/501](#) is incomplete pending reclassification of documents from group [H10K 19/202](#).

Groups [H10K 19/202](#) and [H10K 39/501](#) should be considered in order to perform a complete search.

- 39/601 . {Assemblies of multiple devices comprising at least one organic radiation-sensitive element}

**WARNING**

Groups [H10K 39/601](#) is incomplete pending reclassification of documents from groups [H01L 25/065](#), [H01L 25/0652](#), [H01L 25/0655](#), [H01L 25/0657](#), [H01L 25/16](#), [H01L 25/162](#), [H01L 25/165](#), [H01L 25/167](#) and [H01L 25/18](#).

All groups listed in this Warning should be considered in order to perform a complete search.

Group [H10K 39/601](#) is also impacted by reclassification into groups [H10K 39/10](#), [H10K 39/12](#), [H10K 39/15](#), [H10K 39/18](#) and [H10K 39/621](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 39/621 . . {comprising only organic radiation-sensitive elements}

**WARNING**

Groups [H10K 39/621](#) is incomplete pending reclassification of documents from groups [H01L 25/065](#), [H01L 25/0652](#), [H01L 25/0655](#), [H01L 25/0657](#), [H01L 25/16](#), [H01L 25/162](#), [H01L 25/165](#), [H01L 25/167](#), [H01L 25/18](#) and [H10K 39/601](#).

All groups listed in this Warning should be considered in order to perform a complete search.

**Organic light-emitting devices**

50/00

**Organic light-emitting devices** (integrated devices or assemblies of multiple devices [H10K 59/00](#), [H10K 65/00](#); organic semiconductor lasers [H01S 5/36](#))

**WARNING**

Group [H10K 50/00](#) is impacted by reclassification into group [H10K 50/10](#).

Groups [H10K 50/00](#) and [H10K 50/10](#) should be considered in order to perform a complete search.

50/10

- . OLEDs or polymer light-emitting diodes [PLED]

**WARNING**

Group [H10K 50/10](#) is incomplete pending reclassification of documents from group [H10K 50/00](#).

Groups [H10K 50/00](#) and [H10K 50/10](#) should be considered in order to perform a complete search.

50/11

- . . characterised by the electroluminescent [EL] layers

50/115

- . . . comprising active inorganic nanostructures, e.g. luminescent quantum dots

50/12

- . . . comprising dopants

50/121

- . . . . {for assisting energy transfer, e.g. sensitization}

50/125

- . . . specially adapted for multicolour light emission, e.g. for emitting white light

50/13

- . . . . comprising stacked EL layers within one EL unit

50/131

- . . . . . {with spacer layers between the electroluminescent layers}

50/135

- . . . comprising mobile ions

50/14

- . . Carrier transporting layers

50/15

- . . . Hole transporting layers

50/155

- . . . . comprising dopants

50/156

- . . . . {comprising a multilayered structure}

50/157

- . . . . {between the light-emitting layer and the cathode}

50/16

- . . . Electron transporting layers

50/165

- . . . . comprising dopants

50/166

- . . . . {comprising a multilayered structure}

50/167

- . . . . {between the light-emitting layer and the anode}

50/17

- . . Carrier injection layers

**WARNING**

Group [H10K 50/17](#) is impacted by reclassification into group [H10K 50/171](#).

Groups [H10K 50/17](#) and [H10K 50/171](#) should be considered in order to perform a complete search.



50/171 . . . {[Electron injection layers](#)}

**WARNING**

Group [H10K 50/171](#) is incomplete pending reclassification of documents from group [H10K 50/17](#).

Groups [H10K 50/17](#) and [H10K 50/171](#) should be considered in order to perform a complete search.

50/18 . . Carrier blocking layers

**WARNING**

Group [H10K 50/18](#) is impacted by reclassification into group [H10K 50/181](#).

Groups [H10K 50/18](#) and [H10K 50/181](#) should be considered in order to perform a complete search.

50/181 . . . {[Electron blocking layers](#)}

**WARNING**

Group [H10K 50/181](#) is incomplete pending reclassification of documents from group [H10K 50/18](#).

Groups [H10K 50/18](#) and [H10K 50/181](#) should be considered in order to perform a complete search.

50/182 . . {[OLED comprising a fiber structure](#)}

50/19 . . Tandem OLEDs

50/30 . Organic light-emitting transistors

50/401 . {[Organic light-emitting molecular electronic devices](#)}

**WARNING**

Group [H10K 50/401](#) is incomplete pending reclassification of documents from group [H10K 30/671](#).

Groups [H10K 30/671](#) and [H10K 50/401](#) should be considered in order to perform a complete search.

50/80 . Constructional details

**WARNING**

Group [H10K 50/80](#) is impacted by reclassification into groups [H10K 50/88](#), [H10K 59/80](#) and [H10K 77/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

50/805 . . Electrodes

**WARNING**

Group [H10K 50/805](#) is impacted by reclassification into group [H10K 59/805](#).

Groups [H10K 50/805](#) and [H10K 59/805](#) should be considered in order to perform a complete search.

50/81 . . . Anodes

**WARNING**

Group [H10K 50/81](#) is impacted by reclassification into groups [H10K 50/816](#) and [H10K 59/8051](#).

Groups [H10K 50/81](#), [H10K 50/816](#) and [H10K 59/8051](#) should be considered in order to perform a complete search.

50/813 . . . . characterised by their shape

**WARNING**

Group [H10K 50/813](#) is impacted by reclassification into group [H10K 59/80515](#).

Groups [H10K 50/813](#) and [H10K 59/80515](#) should be considered in order to perform a complete search.

50/814 . . . . combined with auxiliary electrodes, e.g. ITO layer combined with metal lines

**WARNING**

Group [H10K 50/814](#) is impacted by reclassification into group [H10K 59/80516](#).

Groups [H10K 50/814](#) and [H10K 59/80516](#) should be considered in order to perform a complete search.

50/816 . . . . Multilayers, e.g. transparent multilayers

**WARNING**

Group [H10K 50/816](#) is incomplete pending reclassification of documents from group [H10K 50/81](#).

Group [H10K 50/816](#) is also impacted by reclassification into group [H10K 59/80517](#).

Groups [H10K 50/81](#), [H10K 50/816](#) and [H10K 59/80517](#) should be considered in order to perform a complete search.

50/818 . . . . Reflective anodes, e.g. ITO combined with thick metallic layers

**WARNING**

Group [H10K 50/818](#) is impacted by reclassification into group [H10K 59/80518](#).

Groups [H10K 50/818](#) and [H10K 59/80518](#) should be considered in order to perform a complete search.

50/82 . . . Cathodes

**WARNING**

Group [H10K 50/82](#) is impacted by reclassification into group [H10K 50/826](#) and [H10K 59/8052](#).

Groups [H10K 50/82](#), [H10K 50/826](#) and [H10K 59/8052](#) should be considered in order to perform a complete search.

50/822 . . . . characterised by their shape

**WARNING**

Group [H10K 50/822](#) is impacted by reclassification into group [H10K 59/80521](#).

Groups [H10K 50/822](#) and [H10K 59/80521](#) should be considered in order to perform a complete search.

50/824 . . . . combined with auxiliary electrodes

**WARNING**

Group [H10K 50/824](#) is impacted by reclassification into group [H10K 59/80522](#).

Groups [H10K 50/824](#) and [H10K 59/80522](#) should be considered in order to perform a complete search.

50/826 . . . . Multilayers, e.g. opaque multilayers

**WARNING**

Group [H10K 50/826](#) is incomplete pending reclassification of documents from group [H10K 50/82](#).

Group [H10K 50/826](#) is also impacted by reclassification into group [H10K 59/80523](#).

Groups [H10K 50/82](#), [H10K 50/826](#) and [H10K 59/80523](#) should be considered in order to perform a complete search.

50/828 . . . . Transparent cathodes, e.g. comprising thin metal layers

**WARNING**

Group [H10K 50/828](#) is impacted by reclassification into group [H10K 59/80524](#).

Groups [H10K 50/828](#) and [H10K 59/80524](#) should be considered in order to perform a complete search.

50/84 . . . Passivation; Containers; Encapsulations

**WARNING**

Group [H10K 50/84](#) is impacted by reclassification into group [H10K 59/87](#).

Groups [H10K 50/84](#) and [H10K 59/87](#) should be considered in order to perform a complete search.

50/841 . . . . {Self-supporting sealing arrangements}

**WARNING**

Group [H10K 50/841](#) is impacted by reclassification into groups [H10K 50/842](#), [H10K 59/871](#) and [H10K 59/872](#).

All groups listed in this Warning should be considered in order to perform a complete search.

50/842 . . . . Containers

**WARNING**

Group [H10K 50/842](#) is incomplete pending reclassification of documents from group [H10K 50/841](#).

Groups [H10K 50/841](#) and [H10K 50/842](#) should be considered in order to perform a complete search.

50/8423 . . . . {Metallic sealing arrangements}

**WARNING**

Group [H10K 50/8423](#) is impacted by reclassification into group [H10K 59/8721](#).

Groups [H10K 50/8423](#) and [H10K 59/8721](#) should be considered in order to perform a complete search.

50/8426 . . . . {Peripheral sealing arrangements, e.g. adhesives, sealants}

**WARNING**

Group [H10K 50/8426](#) is impacted by reclassification into group [H10K 59/8722](#).

Groups [H10K 50/8426](#) and [H10K 59/8722](#) should be considered in order to perform a complete search.

50/8428 . . . . {Vertical spacers, e.g. arranged between the sealing arrangement and the OLED}

**WARNING**

Group [H10K 50/8428](#) is impacted by reclassification into group [H10K 59/8723](#).

Groups [H10K 50/8428](#) and [H10K 59/8723](#) should be considered in order to perform a complete search.

50/844 . . . . Encapsulations

**WARNING**

Group [H10K 50/844](#) is impacted by reclassification into group [H10K 59/873](#).

Groups [H10K 50/844](#) and [H10K 59/873](#) should be considered in order to perform a complete search.

50/8445 . . . . {multilayered coatings having a repetitive structure, e.g. having multiple organic-inorganic bilayers}

**WARNING**

Group [H10K 50/8445](#) is impacted by reclassification into group [H10K 59/8731](#).

Groups [H10K 50/8445](#) and [H10K 59/8731](#) should be considered in order to perform a complete search.

50/846 . . . . {comprising getter material or desiccants}

**WARNING**

Group [H10K 50/846](#) is impacted by reclassification into group [H10K 59/874](#).

Groups [H10K 50/846](#) and [H10K 59/874](#) should be considered in order to perform a complete search.



- 50/85 . . Arrangements for extracting light from the devices

**WARNING**

Group [H10K 50/85](#) is impacted by reclassification into group [H10K 59/875](#).  
Groups [H10K 50/85](#) and [H10K 59/875](#) should be considered in order to perform a complete search.

- 50/852 . . . comprising a resonant cavity structure, e.g. Bragg reflector pair

**WARNING**

Group [H10K 50/852](#) is impacted by reclassification into group [H10K 59/876](#).  
Groups [H10K 50/852](#) and [H10K 59/876](#) should be considered in order to perform a complete search.

- 50/854 . . . comprising scattering means

**WARNING**

Group [H10K 50/854](#) is impacted by reclassification into group [H10K 59/877](#).  
Groups [H10K 50/854](#) and [H10K 59/877](#) should be considered in order to perform a complete search.

- 50/856 . . . comprising reflective means

**WARNING**

Group [H10K 50/856](#) is impacted by reclassification into group [H10K 59/878](#).  
Groups [H10K 50/856](#) and [H10K 59/878](#) should be considered in order to perform a complete search.

- 50/858 . . . comprising refractive means, e.g. lenses

**WARNING**

Group [H10K 50/858](#) is impacted by reclassification into group [H10K 59/879](#).  
Groups [H10K 50/858](#) and [H10K 59/879](#) should be considered in order to perform a complete search.

- 50/86 . . Arrangements for improving contrast, e.g. preventing reflection of ambient light

**WARNING**

Group [H10K 50/86](#) is impacted by reclassification into group [H10K 59/8791](#).  
Groups [H10K 50/86](#) and [H10K 59/8791](#) should be considered in order to perform a complete search.

- 50/865 . . . {comprising light absorbing layers, e.g. light-blocking layers}

**WARNING**

Group [H10K 50/865](#) is impacted by reclassification into group [H10K 59/8792](#).  
Groups [H10K 50/865](#) and [H10K 59/8792](#) should be considered in order to perform a complete search.

- 50/868 . . {Arrangements for polarized light emission ([H10K 50/86](#) takes precedence)}

**WARNING**

Group [H10K 50/868](#) is impacted by reclassification into group [H10K 59/8793](#).  
Groups [H10K 50/868](#) and [H10K 59/8793](#) should be considered in order to perform a complete search.

- 50/87 . . Arrangements for heating or cooling

**WARNING**

Group [H10K 50/87](#) is impacted by reclassification into group [H10K 59/8794](#).  
Groups [H10K 50/87](#) and [H10K 59/8794](#) should be considered in order to perform a complete search.

- 50/88 . . Terminals, e.g. bond pads

**WARNING**

Group [H10K 50/88](#) is incomplete pending reclassification of documents from group [H10K 50/80](#).  
Groups [H10K 50/80](#) and [H10K 50/88](#) should be considered in order to perform a complete search.

- 59/00 **Integrated devices, or assemblies of multiple devices, comprising at least one organic light-emitting element covered by group [H10K 50/00](#)**

**WARNING**

Group [H10K 59/00](#) is impacted by reclassification into groups [H10K 59/70](#) and [H10K 59/80 - H10K 59/88](#).  
Groups [H10K 59/00](#), [H10K 59/70](#) and [H10K 59/80 - H10K 59/88](#) should be considered in order to perform a complete search.

- 59/10 . OLED displays

**WARNING**

Group [H10K 59/10](#) is impacted by reclassification into group [H10K 59/19](#).  
Groups [H10K 59/10](#) and [H10K 59/19](#) should be considered in order to perform a complete search.

- 59/12 . . Active-matrix OLED [AMOLED] displays

**WARNING**

Group [H10K 59/12](#) is impacted by reclassification into groups [H10K 59/131](#) and [H10K 59/1315](#).  
Groups [H10K 59/12](#), [H10K 59/131](#) and [H10K 59/1315](#) should be considered in order to perform a complete search.

- 59/1201 . . . {Manufacture or treatment}

- 59/121 . . . characterised by the geometry or disposition of pixel elements

- 59/1213 . . . . {the pixel elements being TFTs}

- 59/1216 . . . . {the pixel elements being capacitors}

- 59/122 . . . Pixel-defining structures or layers, e.g. banks

- 59/123 . . . Connection of the pixel electrodes to the thin film transistors [TFT]
- 59/124 . . . Insulating layers formed between TFT elements and OLED elements
- 59/125 . . . including organic TFTs [OTFT]
- 59/126 . . . Shielding, e.g. light-blocking means over the TFTs
- 59/127 . . . comprising two substrates, e.g. display comprising OLED array and TFT driving circuitry on different substrates
- 59/1275 . . . . {Electrical connections of the two substrates}
- 59/128 . . . comprising two independent displays, e.g. for emitting information from two major sides of the display
- 59/129 . . . Chiplets
- 59/13 . . . comprising photosensors that control luminance
- 59/131 . . . Interconnections, e.g. wiring lines or terminals

**WARNING**

Group [H10K 59/131](#) is incomplete pending reclassification of documents from group [H10K 59/12](#).

Groups [H10K 59/12](#) and [H10K 59/131](#) should be considered in order to perform a complete search.

- 59/1315 . . . . {comprising structures specially adapted for lowering the resistance}

**WARNING**

Group [H10K 59/1315](#) is incomplete pending reclassification of documents from group [H10K 59/12](#).

Groups [H10K 59/12](#) and [H10K 59/1315](#) should be considered in order to perform a complete search.

- 59/17 . . Passive-matrix OLED displays

**WARNING**

Group [H10K 59/17](#) is impacted by reclassification into groups [H10K 59/179](#) and [H10K 59/1795](#).

Groups [H10K 59/17](#), [H10K 59/179](#) and [H10K 59/1795](#) should be considered in order to perform a complete search.

- 59/173 . . . comprising banks or shadow masks
- 59/176 . . . comprising two independent displays, e.g. for emitting information from two major sides of the display
- 59/179 . . . Interconnections, e.g. wiring lines or terminals

**WARNING**

Group [H10K 59/179](#) is incomplete pending reclassification of documents from group [H10K 59/17](#).

Groups [H10K 59/17](#) and [H10K 59/179](#) should be considered in order to perform a complete search.

- 59/1795 . . . . {comprising structures specially adapted for lowering the resistance}

**WARNING**

Group [H10K 59/1795](#) is incomplete pending reclassification of documents from group [H10K 59/17](#).

Groups [H10K 59/17](#) and [H10K 59/1795](#) should be considered in order to perform a complete search.

- 59/18 . . Tiled displays
- 59/19 . . Segment displays

**WARNING**

Group [H10K 59/19](#) is incomplete pending reclassification of documents from group [H10K 59/10](#).

Groups [H10K 59/10](#) and [H10K 59/19](#) should be considered in order to perform a complete search.

- 59/221 . . {Static displays, e.g. displaying permanent logos}
- 59/30 . Devices specially adapted for multicolour light emission
- 59/32 . . Stacked devices having two or more layers, each emitting at different wavelengths
- 59/35 . . comprising red-green-blue [RGB] subpixels
- 59/351 . . . {comprising more than three subpixels, e.g. red-green-blue-white [RGBW]}
- 59/352 . . . {the areas of the RGB subpixels being different}
- 59/353 . . . {characterised by the geometrical arrangement of the RGB subpixels}
- 59/38 . . comprising colour filters or colour changing media [CCM]
- 59/40 . OLEDs integrated with touch screens
- 59/50 . OLEDs integrated with light modulating elements, e.g. with electrochromic elements, photochromic elements or liquid crystal elements
- 59/60 . OLEDs integrated with inorganic light-sensitive elements, e.g. with inorganic solar cells or inorganic photodiodes
- 59/65 . . OLEDs integrated with inorganic image sensors

**WARNING**

Group [H10K 59/65](#) is impacted by reclassification into group [H10K 39/34](#).

Groups [H10K 59/65](#) and [H10K 39/34](#) should be considered in order to perform a complete search.

- 59/70 . OLEDs integrated with inorganic light-emitting elements, e.g. with inorganic electroluminescent elements

**WARNING**

Group [H10K 59/70](#) is incomplete pending reclassification of documents from group [H10K 59/00](#).

Groups [H10K 59/00](#) and [H10K 59/70](#) should be considered in order to perform a complete search.

- 59/751 . {Integrated devices having a three-dimensional layout, e.g. 3D ICs}

**WARNING**

Group [H10K 59/751](#) is incomplete pending reclassification of documents from group [H10K 19/201](#).

Groups [H10K 19/201](#) and [H10K 59/751](#) should be considered in order to perform a complete search.

- 59/771 . {Integrated devices comprising a common active layer}

**WARNING**

Group [H10K 59/771](#) is incomplete pending reclassification of documents from group [H10K 19/202](#).

Groups [H10K 19/202](#) and [H10K 59/771](#) should be considered in order to perform a complete search.

- 59/80 . Constructional details

**WARNING**

Group [H10K 59/80](#) is incomplete pending reclassification of documents from groups [H10K 50/80](#) and [H10K 59/00](#).

Groups [H10K 50/80](#), [H10K 59/00](#) and [H10K 59/80](#) should be considered in order to perform a complete search.

- 59/805 . . {Electrodes}

**WARNING**

Group [H10K 59/805](#) is incomplete pending reclassification of documents from groups [H10K 50/805](#) and [H10K 59/00](#).

Groups [H10K 50/805](#), [H10K 59/00](#) and [H10K 59/805](#) should be considered in order to perform a complete search.

- 59/8051 . . . {Anodes}

**WARNING**

Group [H10K 59/8051](#) is incomplete pending reclassification of documents from groups [H10K 50/81](#) and [H10K 59/00](#).

Groups [H10K 50/81](#), [H10K 59/00](#) and [H10K 59/8051](#) should be considered in order to perform a complete search.

- 59/80515 . . . . {characterised by their shape}

**WARNING**

Group [H10K 59/80515](#) is incomplete pending reclassification of documents from groups [H10K 50/813](#) and [H10K 59/00](#).

Groups [H10K 50/813](#), [H10K 59/00](#) and [H10K 59/80515](#) should be considered in order to perform a complete search.

- 59/80516 . . . . {combined with auxiliary electrodes, e.g. ITO layer combined with metal lines}

**WARNING**

Group [H10K 59/80516](#) is incomplete pending reclassification of documents from groups [H10K 50/814](#) and [H10K 59/00](#).

Groups [H10K 50/814](#), [H10K 59/00](#) and [H10K 59/80516](#) should be considered in order to perform a complete search.

- 59/80517 . . . . {Multilayers, e.g. transparent multilayers}

**WARNING**

Group [H10K 59/80517](#) is incomplete pending reclassification of documents from groups [H10K 50/816](#) and [H10K 59/00](#).

Groups [H10K 50/816](#), [H10K 59/00](#) and [H10K 59/80517](#) should be considered in order to perform a complete search.

- 59/80518 . . . . {Reflective anodes, e.g. ITO combined with thick metallic layers}

**WARNING**

Group [H10K 59/80518](#) is incomplete pending reclassification of documents from groups [H10K 50/818](#) and [H10K 59/00](#).

Groups [H10K 50/818](#), [H10K 59/00](#) and [H10K 59/80518](#) should be considered in order to perform a complete search.

- 59/8052 . . . . {Cathodes}

**WARNING**

Group [H10K 59/8052](#) is incomplete pending reclassification of documents from groups [H10K 50/82](#) and [H10K 59/00](#).

Groups [H10K 50/82](#), [H10K 59/00](#) and [H10K 59/8052](#) should be considered in order to perform a complete search.

- 59/80521 . . . . {characterised by their shape}

**WARNING**

Group [H10K 59/80521](#) is incomplete pending reclassification of documents from groups [H10K 50/822](#) and [H10K 59/00](#).

Groups [H10K 50/822](#), [H10K 59/00](#) and [H10K 59/80521](#) should be considered in order to perform a complete search.

- 59/80522 . . . . {combined with auxiliary electrodes}

**WARNING**

Group [H10K 59/80522](#) is incomplete pending reclassification of documents from groups [H10K 50/824](#) and [H10K 59/00](#).

Groups [H10K 50/824](#), [H10K 59/00](#) and [H10K 59/80522](#) should be considered in order to perform a complete search.

59/80523 . . . . {Multilayers, e.g. opaque multilayers}

**WARNING**

Group [H10K 59/80523](#) is incomplete pending reclassification of documents from groups [H10K 50/826](#) and [H10K 59/00](#).

Groups [H10K 50/826](#), [H10K 59/00](#) and [H10K 59/80523](#) should be considered in order to perform a complete search.

59/80524 . . . . {Transparent cathodes, e.g. comprising thin metal layers}

**WARNING**

Group [H10K 59/80524](#) is incomplete pending reclassification of documents from groups [H10K 50/828](#) and [H10K 59/00](#).

Groups [H10K 50/828](#), [H10K 59/00](#) and [H10K 59/80524](#) should be considered in order to perform a complete search.

59/82 . . Interconnections, e.g. terminals ([H10K 59/131](#), [H10K 59/179](#) take precedence)

**WARNING**

Group [H10K 59/82](#) is incomplete pending reclassification of documents from group [H10K 59/00](#).

Groups [H10K 59/00](#) and [H10K 59/82](#) should be considered in order to perform a complete search.

59/84 . . Parallel electrical configurations of multiple OLEDs

**WARNING**

Group [H10K 59/84](#) is incomplete pending reclassification of documents from group [H10K 59/00](#).

Groups [H10K 59/00](#) and [H10K 59/84](#) should be considered in order to perform a complete search.

59/86 . . Series electrical configurations of multiple OLEDs

**WARNING**

Group [H10K 59/86](#) is incomplete pending reclassification of documents from group [H10K 59/00](#).

Groups [H10K 59/00](#) and [H10K 59/86](#) should be considered in order to perform a complete search.

59/87 . . {Passivation; Containers; Encapsulations}

**WARNING**

Group [H10K 59/87](#) is incomplete pending reclassification of documents from groups [H10K 50/84](#) and [H10K 59/00](#).

Groups [H10K 50/84](#), [H10K 59/00](#) and [H10K 59/87](#) should be considered in order to perform a complete search.

59/871 . . . {Self-supporting sealing arrangements}

**WARNING**

Groups [H10K 59/871](#) and [H10K 59/872](#) are incomplete pending reclassification of documents from groups [H10K 50/841](#) and [H10K 59/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

59/872 . . . . {Containers}

59/8721 . . . . {Metallic sealing arrangements}

**WARNING**

Group [H10K 59/8721](#) is incomplete pending reclassification of documents from groups [H10K 50/8423](#) and [H10K 59/00](#).

Groups [H10K 50/8423](#), [H10K 59/00](#) and [H10K 59/8721](#) should be considered in order to perform a complete search.

59/8722 . . . . {Peripheral sealing arrangements, e.g. adhesives, sealants}

**WARNING**

Group [H10K 59/8722](#) is incomplete pending reclassification of documents from groups [H10K 50/8426](#) and [H10K 59/00](#).

Groups [H10K 50/8426](#), [H10K 59/00](#) and [H10K 59/8722](#) should be considered in order to perform a complete search.

59/8723 . . . . {Vertical spacers, e.g. arranged between the sealing arrangement and the OLED}

**WARNING**

Group [H10K 59/8723](#) is incomplete pending reclassification of documents from groups [H10K 50/8428](#) and [H10K 59/00](#).

Groups [H10K 50/8428](#), [H10K 59/00](#) and [H10K 59/8723](#) should be considered in order to perform a complete search.

59/873 . . . {Encapsulations}

**WARNING**

Group [H10K 59/873](#) is incomplete pending reclassification of documents from groups [H10K 50/844](#) and [H10K 59/00](#).

Groups [H10K 50/844](#), [H10K 59/00](#) and [H10K 59/873](#) should be considered in order to perform a complete search.

- 59/8731 . . . {multilayered coatings having a repetitive structure, e.g. having multiple organic-inorganic bilayers}

**WARNING**

Group [H10K 59/8731](#) is incomplete pending reclassification of documents from groups [H10K 50/8445](#) and [H10K 59/00](#).

Groups [H10K 50/8445](#), [H10K 59/00](#) and [H10K 59/8731](#) should be considered in order to perform a complete search.

- 59/874 . . . {including getter material or desiccant}

**WARNING**

Group [H10K 59/874](#) is incomplete pending reclassification of documents from groups [H10K 50/846](#) and [H10K 59/00](#).

Groups [H10K 50/846](#), [H10K 59/00](#) and [H10K 59/874](#) should be considered in order to perform a complete search.

- 59/875 . . {Arrangements for extracting light from the devices}

**WARNING**

Group [H10K 59/875](#) is incomplete pending reclassification of documents from groups [H10K 50/85](#) and [H10K 59/00](#).

Groups [H10K 50/85](#), [H10K 59/00](#) and [H10K 59/875](#) should be considered in order to perform a complete search.

- 59/876 . . . {comprising a resonant cavity structure, e.g. Bragg reflector pair}

**WARNING**

Group [H10K 59/876](#) is incomplete pending reclassification of documents from groups [H10K 50/852](#) and [H10K 59/00](#).

Groups [H10K 50/852](#), [H10K 59/00](#) and [H10K 59/876](#) should be considered in order to perform a complete search.

- 59/877 . . . {comprising scattering means}

**WARNING**

Group [H10K 59/877](#) is incomplete pending reclassification of documents from groups [H10K 50/854](#) and [H10K 59/00](#).

Groups [H10K 50/854](#), [H10K 59/00](#) and [H10K 59/877](#) should be considered in order to perform a complete search.

- 59/878 . . . {comprising reflective means}

**WARNING**

Group [H10K 59/878](#) is incomplete pending reclassification of documents from groups [H10K 50/856](#) and [H10K 59/00](#).

Groups [H10K 50/856](#), [H10K 59/00](#) and [H10K 59/878](#) should be considered in order to perform a complete search.

- 59/879 . . . {comprising refractive means, e.g. lenses}

**WARNING**

Group [H10K 59/879](#) is incomplete pending reclassification of documents from groups [H10K 50/858](#) and [H10K 59/00](#).

Groups [H10K 50/858](#), [H10K 59/00](#) and [H10K 59/879](#) should be considered in order to perform a complete search.

- 59/8791 . . {Arrangements for improving contrast, e.g. preventing reflection of ambient light}

**WARNING**

Group [H10K 59/8791](#) is incomplete pending reclassification of documents from groups [H10K 50/86](#) and [H10K 59/00](#).

Groups [H10K 50/86](#), [H10K 59/00](#) and [H10K 59/8791](#) should be considered in order to perform a complete search.

- 59/8792 . . . {comprising light absorbing layers, e.g. black layers}

**WARNING**

Group [H10K 59/8792](#) is incomplete pending reclassification of documents from groups [H10K 50/865](#) and [H10K 59/00](#).

Groups [H10K 50/865](#), [H10K 59/00](#) and [H10K 59/8792](#) should be considered in order to perform a complete search.

- 59/8793 . . {Arrangements for polarized light emission ([H10K 59/8791](#) takes precedence)}

**WARNING**

Group [H10K 59/8793](#) is incomplete pending reclassification of documents from groups [H10K 50/868](#) and [H10K 59/00](#).

Groups [H10K 50/868](#), [H10K 59/00](#) and [H10K 59/8793](#) should be considered in order to perform a complete search.

- 59/8794 . . {Arrangements for heating and cooling}

**WARNING**

Group [H10K 59/8794](#) is incomplete pending reclassification of documents from groups [H10K 50/87](#) and [H10K 59/00](#).

Groups [H10K 50/87](#), [H10K 59/00](#) and [H10K 59/8794](#) should be considered in order to perform a complete search.

- 59/88 . . Dummy elements, i.e. elements having non-functional features

**WARNING**

Group [H10K 59/88](#) is incomplete pending reclassification of documents from group [H10K 59/00](#).

Groups [H10K 59/00](#) and [H10K 59/88](#) should be considered in order to perform a complete search.



59/90	<ul style="list-style-type: none"> <li>Assemblies of multiple devices comprising at least one organic light-emitting element</li> </ul> <p><b>WARNING</b></p> <p>Groups <a href="#">H10K 59/90</a> and <a href="#">H10K 59/95</a> are incomplete pending reclassification of documents from groups <a href="#">H01L 25/065</a>, <a href="#">H01L 25/0652</a>, <a href="#">H01L 25/0655</a>, <a href="#">H01L 25/0657</a>, <a href="#">H01L 25/16</a>, <a href="#">H01L 25/162</a>, <a href="#">H01L 25/165</a>, <a href="#">H01L 25/167</a> and <a href="#">H01L 25/18</a>.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p> <p>Group <a href="#">H10K 59/90</a> is also impacted by reclassification into group <a href="#">H10K 59/95</a>.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>	<ul style="list-style-type: none"> <li>71/15 . . . characterised by the solvent used</li> <li>71/16 . . using physical vapour deposition [PVD], e.g. vacuum deposition or sputtering</li> <li>71/162 . . . {using laser ablation}</li> <li>71/164 . . . {using vacuum deposition}</li> <li>71/166 . . . {using selective deposition, e.g. using a mask}</li> <li>71/18 . . using non-liquid printing techniques, e.g. thermal transfer printing from a donor sheet</li> <li>71/191 . . {characterised by provisions for the orientation or alignment of the layer to be deposited}</li> <li>71/20 . Changing the shape of the active layer in the devices, e.g. patterning</li> <li>71/211 . . {by selective transformation of an existing layer}</li> <li>71/221 . . {by lift-off techniques}</li> <li>71/231 . . {by etching of existing layers}</li> <li>71/233 . . . {by photolithographic etching}</li> <li>71/236 . . . {using printing techniques, e.g. applying the etch liquid using an ink jet printer}</li> <li>71/30 . Doping active layers, e.g. electron transporting layers</li> <li>71/311 . {Purifying organic semiconductor materials}</li> <li>71/40 . Thermal treatment, e.g. annealing in the presence of a solvent vapour</li> </ul> <p><b>WARNING</b></p> <p>Groups <a href="#">H10K 71/40</a>, <a href="#">H10K 71/421</a> and <a href="#">H10K 71/441</a> are incomplete pending reclassification of documents from group <a href="#">H10K 71/00</a>.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>
59/95	<ul style="list-style-type: none"> <li>wherein all light-emitting elements are organic, e.g. assembled OLED displays</li> </ul> <p><b>WARNING</b></p> <p>Group <a href="#">H10K 59/95</a> is incomplete pending reclassification of documents from groups <a href="#">H01L 25/04</a>, <a href="#">H01L 25/16</a>, <a href="#">H01L 25/162</a>, <a href="#">H01L 25/165</a>, <a href="#">H01L 25/167</a>, <a href="#">H01L 25/18</a> and <a href="#">H10K 59/90</a>.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>	
65/00	<p><b>Integrated devices, or assemblies of multiple devices, comprising at least one organic light-emitting element and at least one organic radiation-sensitive element, e.g. organic opto-couplers (organic image sensors integrated with organic light-emitting devices <a href="#">H10K 39/34</a>; OLED displays integrated with photosensors <a href="#">H10K 59/13</a>)</b></p> <p><b>WARNING</b></p> <p>Group <a href="#">H10K 65/00</a> is incomplete pending reclassification of documents from groups <a href="#">H01L 25/04</a> and <a href="#">H01L 25/18</a>.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>	<ul style="list-style-type: none"> <li>71/421 . . {using coherent electromagnetic radiation, e.g. laser annealing}</li> <li>71/441 . . {in the presence of solvent vapors, e.g. solvent vapour annealing}</li> <li>71/50 . Forming devices by joining two substrates together, e.g. lamination techniques</li> <li>71/60 . Forming conductive regions or layers, e.g. electrodes</li> <li>71/611 . . {using printing deposition, e.g. ink jet printing}</li> <li>71/621 . {Providing a shape to conductive layers, e.g. patterning or selective deposition}</li> <li>71/70 . Testing, e.g. accelerated lifetime tests</li> <li>71/80 . using temporary substrates</li> <li>71/811 . {Controlling the atmosphere during processing (<a href="#">H10K 71/40</a> takes precedence)}</li> <li>71/821 . {Patterning of a layer by embossing, e.g. stamping to form trenches in an insulating layer}</li> <li>71/831 . {Aging}</li> <li>71/841 . {Applying alternating current [AC] during manufacturing or treatment}</li> <li>71/851 . {Division of substrate}</li> <li>71/861 . {Repairing}</li> </ul>
<b>Manufacture or treatment; Constructional details</b>		
71/00	<p><b>Manufacture or treatment specially adapted for the organic devices covered by this subclass</b></p> <p><b>WARNING</b></p> <p>Group <a href="#">H10K 71/00</a> is impacted by reclassification into groups <a href="#">H10K 71/40</a>, <a href="#">H10K 71/421</a> and <a href="#">H10K 71/441</a>.</p> <p>All groups listed in this Warning should be considered in order to perform a complete search.</p>	
71/10	<ul style="list-style-type: none"> <li>Deposition of organic active material</li> </ul>	
71/12	<ul style="list-style-type: none"> <li>using liquid deposition, e.g. spin coating</li> </ul>	
71/125	<ul style="list-style-type: none"> <li>{using electrolytic deposition e.g. in-situ electropolymerisation}</li> </ul>	
71/13	<ul style="list-style-type: none"> <li>using printing techniques, e.g. ink-jet printing or screen printing</li> </ul>	
71/135	<ul style="list-style-type: none"> <li>{using ink-jet printing}</li> </ul>	



**77/00** Constructional details of devices covered by this subclass and not covered by groups [H10K 10/80](#), [H10K 30/80](#), [H10K 50/80](#) or [H10K 59/80](#)

**WARNING**

Group [H10K 77/00](#) is incomplete pending reclassification of documents from groups [H10K 10/80](#), [H10K 30/80](#), [H10K 50/80](#) and [H10K 99/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 77/10 . Substrates, e.g. flexible substrates
- 77/111 . . {Flexible substrates}

**85/00** Organic materials used in the body or electrodes of devices covered by this subclass

**NOTE**

This group only covers organic materials for their electrical or other properties, insofar as they are specially adapted for the devices covered by this subclass.

**WARNING**

Group [H10K 85/00](#) is impacted by reclassification into group [H10K 85/50](#).

Groups [H10K 85/00](#) and [H10K 85/50](#) should be considered in order to perform a complete search.

- 85/10 . Organic polymers or oligomers
- 85/111 . . {comprising aromatic, heteroaromatic, or aryl chains, e.g. polyaniline, polyphenylene or polyphenylene vinylene}
- 85/113 . . . {Heteroaromatic compounds comprising sulfur or selen, e.g. polythiophene}
- 85/1135 . . . . {Polyethylene dioxythiophene [PEDOT]; Derivatives thereof}
- 85/114 . . . {Poly-phenylenevinylene; Derivatives thereof}
- 85/115 . . . {Polyfluorene; Derivatives thereof}
- 85/141 . . {comprising aliphatic or olefinic chains, e.g. poly N-vinylcarbazol, PVC or PTFE}
- 85/143 . . . {Polyacetylene; Derivatives thereof}
- 85/146 . . . {poly N-vinylcarbazol; Derivatives thereof}
- 85/151 . . {Copolymers}
- 85/154 . . {Ladder-type polymers}
- 85/20 . Carbon compounds, e.g. carbon nanotubes or fullerenes
- 85/211 . . {Fullerenes, e.g. C<sub>60</sub>}
- 85/215 . . . {comprising substituents, e.g. PCBM}
- 85/221 . . {Carbon nanotubes}
- 85/225 . . . {comprising substituents}
- 85/30 . Coordination compounds
- 85/311 . . {Phthalocyanine}
- 85/321 . . {Metal complexes comprising a group IIIA element, e.g. Tris (8-hydroxyquinoline) gallium [Gaq3]}
- 85/322 . . . {comprising boron}

**WARNING**

Group [H10K 85/322](#) is impacted by reclassification into group [H10K 85/658](#).

Groups [H10K 85/322](#) and [H10K 85/658](#) should be considered in order to perform a complete search.

- 85/324 . . . {comprising aluminium, e.g. Alq<sub>3</sub>}
- 85/326 . . . {comprising gallium}
- 85/331 . . {Metal complexes comprising an iron-series metal, e.g. Fe, Co, Ni}
- 85/341 . . {Transition metal complexes, e.g. Ru(II)polypyridine complexes ([H10K 85/331](#) takes precedence)}
- 85/342 . . . {comprising iridium}
- 85/344 . . . {comprising ruthenium}
- 85/346 . . . {comprising platinum}
- 85/348 . . . {comprising osmium}
- 85/351 . . {Metal complexes comprising lanthanides or actinides, e.g. comprising europium}
- 85/361 . . {Polynuclear complexes, i.e. complexes comprising two or more metal centers}
- 85/371 . . {Metal complexes comprising a group IB metal element, e.g. comprising copper, gold or silver}
- 85/381 . . {Metal complexes comprising a group IIB metal element, e.g. comprising cadmium, mercury or zinc}
- 85/40 . Organosilicon compounds, e.g. TIPS pentacene
- 85/50 . Organic perovskites; Hybrid organic-inorganic perovskites [HOIP], e.g. CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub>

**WARNING**

Group [H10K 85/50](#) is incomplete pending reclassification of documents from group [H10K 85/00](#).

Groups [H10K 85/00](#) and [H10K 85/50](#) should be considered in order to perform a complete search.

- 85/60 . Organic compounds having low molecular weight ([H10K 85/10](#) - [H10K 85/50](#) take precedence)
- 85/611 . . {Charge transfer complexes}
- 85/615 . . {Polycyclic condensed aromatic hydrocarbons, e.g. anthracene}
- 85/621 . . . {Aromatic anhydride or imide compounds, e.g. perylene tetra-carboxylic dianhydride or perylene tetracarboxylic di-imide}
- 85/622 . . . {containing four rings, e.g. pyrene}
- 85/623 . . . {containing five rings, e.g. pentacene}
- 85/624 . . . {containing six or more rings}
- 85/625 . . . {containing at least one aromatic ring having 7 or more carbon atoms, e.g. azulene}
- 85/626 . . . {containing more than one polycyclic condensed aromatic rings, e.g. bis-anthracene}
- 85/631 . . {Amine compounds having at least two aryl rest on at least one amine-nitrogen atom, e.g. triphenylamine}
- 85/633 . . . {comprising polycyclic condensed aromatic hydrocarbons as substituents on the nitrogen atom}
- 85/636 . . . {comprising heteroaromatic hydrocarbons as substituents on the nitrogen atom}
- 85/649 . . {Aromatic compounds comprising a hetero atom}
- 85/652 . . . {Cyanine dyes}
- 85/653 . . . {comprising only oxygen as heteroatom}
- 85/654 . . . {comprising only nitrogen as heteroatom ([H10K 85/652](#) takes precedence)}
- 85/655 . . . {comprising only sulfur as heteroatom}
- 85/656 . . . {comprising two or more different heteroatoms per ring ([H10K 85/652](#) takes precedence)}
- 85/6565 . . . . {Oxadiazole compounds}

- 85/657 . . . {Polycyclic condensed heteroaromatic hydrocarbons}
- 85/6572 . . . . {comprising only nitrogen in the heteroaromatic polycondensed ring system, e.g. phenanthroline or carbazole}
- 85/6574 . . . . {comprising only oxygen in the heteroaromatic polycondensed ring system, e.g. cumarine dyes}
- 85/6576 . . . . {comprising only sulfur in the heteroaromatic polycondensed ring system, e.g. benzothiophene}
- 85/658 . . {Organoboranes}

**WARNING**

Group [H10K 85/658](#) is incomplete pending reclassification of documents from group [H10K 85/322](#).

Groups [H10K 85/322](#) and [H10K 85/658](#) should be considered in order to perform a complete search.

- 85/701 . {Langmuir Blodgett films}
- 85/731 . {Liquid crystalline materials}
- 85/761 . {Biomolecules or bio-macromolecules, e.g. proteins, chlorophyll, lipids or enzymes}
- 85/791 . {Starburst compounds}

**99/00 Subject matter not provided for in other groups of this subclass****WARNING**

Group [H10K 99/00](#) is impacted by reclassification into group [H10K 77/00](#).

Groups [H10K 99/00](#) and [H10K 77/00](#) should be considered in order to perform a complete search.

**Indexing scheme associated with group [H10K 85/00](#), relating to properties of organic materials****2101/00 Properties of the organic materials covered by group [H10K 85/00](#)****WARNING**

Group [H10K 2101/00](#) is impacted by reclassification into groups [H10K 2101/20](#) - [H10K 2101/25](#), [H10K 2101/60](#), [H10K 2101/70](#) and [H10K 2102/00](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 2101/10 . Triplet emission
- 2101/20 . Delayed fluorescence emission

**WARNING**

Groups [H10K 2101/20](#) and [H10K 2101/25](#) are incomplete pending reclassification of documents from group [H10K 2101/00](#).

Groups [H10K 2101/00](#), [H10K 2101/20](#) and [H10K 2101/25](#) should be considered in order to perform a complete search.

- 2101/25 . . using exciplex
- 2101/27 . {Combination of fluorescent and phosphorescent emission}

- 2101/30 . Highest occupied molecular orbital [HOMO], lowest unoccupied molecular orbital [LUMO] or Fermi energy values
- 2101/40 . Interrelation of parameters between multiple constituent active layers or sublayers, e.g. HOMO values in adjacent layers
- 2101/50 . Oxidation-reduction potentials, e.g. excited state redox potentials
- 2101/60 . Up-conversion, e.g. by triplet-triplet annihilation

**WARNING**

Group [H10K 2101/60](#) is incomplete pending reclassification of documents from group [H10K 2101/00](#).

Groups [H10K 2101/00](#) and [H10K 2101/60](#) should be considered in order to perform a complete search.

- 2101/70 . Down-conversion, e.g. by singlet fission

**WARNING**

Group [H10K 2101/70](#) is incomplete pending reclassification of documents from group [H10K 2101/00](#).

Groups [H10K 2101/00](#) and [H10K 2101/70](#) should be considered in order to perform a complete search.

- 2101/80 . {Composition varying spatially, e.g. having a spatial gradient}
- 2101/90 . {Multiple hosts in the emissive layer}

**Indexing scheme associated with groups [H10K 10/80](#), [H10K 30/80](#), [H10K 50/80](#), [H10K 59/80](#) and [H10K 77/00](#), relating to constructional details****2102/00 Constructional details relating to the organic devices covered by this subclass****WARNING**

Group [H10K 2102/00](#) is incomplete pending reclassification of documents from group [H10K 2101/00](#).

Groups [H10K 2101/00](#) and [H10K 2102/00](#) should be considered in order to perform a complete search.

- 2102/10 . Transparent electrodes, e.g. using graphene
- 2102/101 . . {comprising transparent conductive oxides [TCO]}
- 2102/102 . . . {comprising tin oxides, e.g. fluorine-doped SnO<sub>2</sub>}
- 2102/103 . . . {comprising indium oxides, e.g. ITO}
- 2102/20 . Metallic electrodes, e.g. using a stack of layers
- 2102/301 . {Details of OLEDs}
- 2102/302 . . {of OLED structures}
- 2102/3023 . . . {Direction of light emission}
- 2102/3026 . . . . {Top emission}
- 2102/3031 . . . . {Two-side emission, e.g. transparent OLEDs [TOLED]}
- 2102/3035 . . . . {Edge emission}
- 2102/311 . . {Flexible OLED}
- 2102/321 . . {Inverted OLED, i.e. having cathode between substrate and anode}
- 2102/331 . . {Nanoparticles used in non-emissive layers, e.g. in packaging layer}

Indexing scheme associated with groups H10K10/80, H10K30/80, H10K50/80, H10K59/80 and H10K77/00, relating to...

**H10K**

2102/341	. .	{Short-circuit prevention}
2102/351	. .	{Thickness}
2102/361	. .	{Temperature}