

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 ₂ particles in a polymer matrix}	19/00	Integrated devices, or assemblies of multiple devices, comprising at least one organic element specially adapted for rectifying, amplifying, oscillating or switching, covered by group H10K 10/00
10/481	. . . . . {characterised by the gate conductors}		
10/482	. . . . . {the IGFET comprising multiple separately-addressable gate electrodes}		<u>WARNING</u>
10/484	. . . . . {characterised by the channel regions}		Group H10K 19/00 is incomplete pending reclassification of documents from group H01L 25/18 . Groups H01L 25/18 and H10K 19/00 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 H10K 19/00 is also impacted by reclassification into group H10K 19/80 .
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 H10K 19/00 and H10K 19/80 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		<u>WARNING</u>
	<u>WARNING</u>		Group H10K 19/201 is impacted by reclassification into groups H10K 39/401 and H10K 59/751 .
	Group H10K 10/80 is impacted by reclassification into group H10K 77/00 .		Groups H10K 19/201 , H10K 39/401 and H10K 59/751 should be considered in order to perform a complete search.
	Groups H10K 10/80 and H10K 77/00 should be considered in order to perform a complete search.		
10/82	. . Electrodes	19/202	. {Integrated devices comprising a common active layer}
	<u>WARNING</u>		<u>WARNING</u>
	Group H10K 10/82 is impacted by reclassification into group H10K 10/86 .		Group H10K 19/202 is impacted by reclassification into groups H10K 39/501 and H10K 59/771 .
	Groups H10K 10/82 and H10K 10/86 should be considered in order to perform a complete search.		Groups H10K 19/202 , H10K 39/501 and H10K 59/771 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
	<u>WARNING</u>		<u>WARNING</u>
	Group H10K 10/86 is incomplete pending reclassification of documents from group H10K 10/82 .		Group H10K 19/80 is incomplete pending reclassification of documents from group H10K 19/00 .
	Groups H10K 10/82 and H10K 10/86 should be considered in order to perform a complete search.		Groups H10K 19/00 and H10K 19/80 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 TiO₂ (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. TiO₂}

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

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. C₆₀}
- 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. Alq₃}
- 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. CH₃NH₃PbI₃

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 SnO₂}
- 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}