

CPC COOPERATIVE PATENT CLASSIFICATION

G PHYSICS (NOTES omitted)

INSTRUMENTS

G02 OPTICS (NOTE omitted)

G02F DEVICES OR ARRANGEMENTS, THE OPTICAL OPERATION OF WHICH IS MODIFIED BY CHANGING THE OPTICAL PROPERTIES OF THE MEDIUM OF THE DEVICES OR ARRANGEMENTS FOR THE CONTROL OF THE INTENSITY, COLOUR, PHASE, POLARISATION OR DIRECTION OF LIGHT, e.g. SWITCHING, GATING, MODULATING OR DEMODULATING; TECHNIQUES OR PROCEDURES FOR THE OPERATION THEREOF; FREQUENCY-CHANGING; NON-LINEAR OPTICS; OPTICAL LOGIC ELEMENTS; OPTICAL ANALOGUE/DIGITAL CONVERTERS (optical transfer means between sensing member and indicating or recording part in connection with measuring [G01D 5/26](#); devices in which mathematical operations are carried out with optical elements [G06E 3/00](#), {[G06E 3/001](#)} ; electrical signal transmission systems using optical means to convert the input signal [G08C 19/36](#); information-recording by electric or magnetic means and reproducing by sensing optical properties [G11B 11/00](#); static stores using optical elements [G11C 13/04](#); transmission systems employing electromagnetic waves other than radio waves, e.g. light, infra-red radiation, [H04B 10/00](#); optical multiplex systems [H04J 14/00](#); pictorial communication, e.g. television [H04N](#))

WARNINGS

- The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
Subject matter covered by these groups is classified in the following CPC groups:
[G02F 1/13357](#) covered by [G02F 1/1336](#) and subgroups
- In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00 **Devices or arrangements for the control of the intensity, colour, phase, polarisation or direction of light arriving from an independent light source, e.g. switching, gating, or modulating; Non-linear optics** (thermometers using change of colour or translucency [G01K 11/12](#); using changes in fluorescence [G01K 11/32](#); light guide devices [G02B 6/00](#); optical devices or arrangements using movable or deformable elements for controlling light independent of the light source [G02B 26/00](#); control of light in general [G05D 25/00](#); visible signalling systems [G08B 5/00](#); indicating arrangements for variable information by selection or combination of individual elements [G09F 9/00](#); control arrangements or circuits for visual indicators other than cathode-ray tubes [G09G 3/00](#); control of light sources [H01S 3/10](#), [H05B 33/08](#), [H05B 35/00](#) - [H05B 43/00](#); {photochromic filters [G02B 5/23](#); optical logic elements [G02F 3/00](#)})

NOTE

This group covers only :

- devices or arrangements, e.g. cells, the optical operation of which is modified by changing the optical properties of the medium of the devices or arrangements by the influence or control of physical parameters, e.g. electric fields, electric current, magnetic fields, sound or mechanical vibrations, stress or thermal effects;
- devices or arrangements in which the electric or magnetic field component of the light beams influences the optical properties of the medium, i.e. non-linear optics;
- control of light by electromagnetic waves, e.g. radio waves, or by electrons or other elementary particles.

1/0009 . {Materials therefor}

NOTE

[G02F 1/0009](#) and subgroups contain mostly non-patent literature

1/0018 . . {Electro-optical materials}

1/0027	. . . {with ferro-electric properties (domain inversion in ferro-electric materials G02F 1/3558 ; ferro-electric materials in general H01G 7/02)}	1/0128	. . . {based on electro-mechanical, magneto-mechanical, elasto-optic effects}
1/0036	. . . {Magneto-optical materials (magnetic materials in general H01F)}	1/0131	. . . {based on elasto-optic, i.e. photoelastic effect, e.g. mechanically induced birefringence (acousto-optic devices G02F 1/11)}
1/0045	. . . {Liquid crystals as far as the physical properties are concerned (chemical composition and properties of liquid crystals C09K 19/00)}	1/0134	. . . . {in optical waveguides}
1/0054	. . . {Structure, phase transitions, NMR, ESR, Moessbauer spectra}	1/0136	. . . {for the control of polarisation, e.g. state of polarisation [SOP] control, polarisation scrambling, TE-TM mode conversion or separation (G02F 1/0353 takes precedence)}
1/0063	. . . {Optical properties, e.g. absorption, reflection, non-linear effects, birefringence (non linear optics in general G02F 1/35)}	2001/0139	. . . {Polarisation scrambling; Depolarisers}
1/0072	. . . {Mechanical, acoustic, electro-elastic, magneto-elastic properties}	2001/0142	. . . {TE-TM mode conversion}
1/0081	. . . {Electric or magnetic properties}	2001/0144	. . . {TE-TM mode separation}
1/009	. . . {Thermal properties (thermometers using change of colour or translucency G01K 11/12 ; radiation pyrometry G01J 5/00)}	1/0147	. . . {based on thermo-optic effects (G02F 1/132 takes precedence; tenebrescent compositions C09K 9/00 ; radiation pyrometry G01J 5/00 ; thermometers using change of colour or translucency G01K 11/12)}
1/01	. for the control of the intensity, phase, polarisation or colour (G02F 1/29 , G02F 1/35 take precedence)	1/015	. . . based on semiconductor elements with at least one potential jump barrier, e.g. PN, PIN junction (G02F 1/03 takes precedence)
WARNING		2001/0151	. . . . {modulating the refractive index}
Group G02F 1/01 is impacted by reclassification into groups G02F 1/165 , G02F 1/166 , G02F 1/1673 , and G02F 1/169 .		2001/0152	. . . . {by free carrier effects (Plasma)}
All groups listed in this Warning should be considered in order to perform a complete search.		2001/0153	. . . . {by electro-refraction (Kramers-Kronig relation)}
1/0102	. . . {Constructional details (G02F 1/1306 , G02F 1/133 take precedence)}	2001/0154	. . . . {by electro-optic effects (LEO=Pockels, QEO=Kerr)}
1/0105	. . . {Illumination devices (for liquid crystal cells G02F1/13357 ; for display devices for electronic time pieces G04G 9/0041)}	2001/0155	. . . . {modulating the optical absorption}
1/0107	. . . {Gaskets, spacers, sealing of the cell; Filling and closing of the cell (for liquid crystal cells G02F 1/1339 , G02F 1/1341 ; for electrochromic or electrolytic cells G02F 1/161)}	2001/0156	. . . . {by free carrier absorption}
1/011	. . . {in optical waveguides (G02F 1/0134 , G02F 1/01708 , G02F 1/025 , G02F 1/035 , G02F 1/0508 , G02F 1/0553 , G02F 1/065 , G02F 1/073 , G02F 1/095 , G02F 1/125 , G02F 1/1326 , G02F 1/225 take precedence; optical waveguides in general G02B 6/00)}	2001/0157	. . . . {by electro-absorption effects (FK, Stark, QCSE)}
2001/0113	. . . . {made of glass, e.g. silica-based optical waveguides}	2001/0158	. . . . . {with blue-shift of the absorption band}
1/0115	. . . . {in optical fibres}	2001/0159	. . . . . {with red-shift of the absorption band}
1/0118	. . . . {by controlling the evanescent coupling of light from a fibre into an active, e.g. electro-optic, overlay}	1/017	. . . Structures with periodic or quasi periodic potential variation, e.g. superlattices, quantum wells
1/0121	. . . {Operation of the device; Circuit arrangements not otherwise provided for (G02F 1/0327 , G02F 1/0516 , G02F 1/076 , G02F 1/092 , G02F 1/113 , G02F 1/13306 , G02F 1/163 take precedence)}	1/01708	. . . . . {in an optical waveguide structure}
1/0123	. . . {Circuits for the control or stabilisation of the bias voltage, e.g. automatic bias control [ABC] feedback loops}	1/01716	. . . . . {Optically controlled superlattice or quantum well devices}
1/0126	. . . {by another light beam, i.e. opto-optical modulation (G02F 1/01716 , G02F 1/0338 , G02F 1/0533 , G02F 1/0541 , G02F 1/0558 , G02F 1/135 , G02F 1/293 take precedence)}	1/01725	. . . . . {with a non-rectangular quantum well structure, e.g. coupled, graded, stepped quantum wells}
		2001/01733	. . . . . {Coupled or double quantum wells}
		2001/01741	. . . . . {Asymmetrically coupled or double quantum wells}
		2001/0175	. . . . . {with a spatially varied well profile, e.g. graded, stepped quantum wells}
		2001/01758	. . . . . {with an asymmetric well profile, e.g. asymmetrically stepped quantum wells}
		2001/01766	. . . . . {Strained superlattice or quantum well devices}
		2001/01775	. . . . . {involving an intersubband transition in one well, e.g. e1->e2}
		2001/01783	. . . . . {Quantum wire}
		2001/01791	. . . . . {Quantum box or dot}
		1/025	. . . in an optical waveguide structure (G02F 1/017 , G02F 1/2257 take precedence)
		1/03	. . . based on ceramics or electro-optical crystals, e.g. exhibiting Pockels effect or Kerr effect (G02F 1/061 takes precedence)
		1/0305	. . . . {Constructional arrangements (G02F 1/0327 - G02F 1/05 take precedence)}

- 1/0311 {Structural association of optical elements, e.g. lenses, polarizers, phase plates, with the crystal}
- 1/0316 {Electrodes}
- 1/0322 {Arrangements comprising two or more independently controlled crystals}
- 1/0327 . . . {Operation of the cell; Circuit arrangements ([G02F 1/05](#) takes precedence)}
- 1/0333 . . . {addressed by a beam of charged particles, e.g. directed to an adjacent layer exhibiting secondary emission or bombardment-induced conductivity effect ([G02F 1/05](#) takes precedence; [electrography](#), [electrophotography G03G](#); screens for cathode ray tubes acting as light valves [H01J 29/12](#))}
- 1/0338 . . . {structurally associated with a photoconductive layer or having photo-refractive properties ([G02F 1/05](#) takes precedence)}
- 1/0344 . . . {controlled by a high-frequency electromagnetic wave component in an electric waveguide ([G02F 1/0356](#), [G02F 1/05](#), [G02F 1/2255](#), [G02F 1/3134](#) take precedence)}
- 1/035 . . . in an optical waveguide structure
- 1/0353 {involving an electro-optic TE-TM mode conversion}
- 1/0356 {controlled by a high-frequency electromagnetic wave component in an electric waveguide structure}
- 1/05 . . . with ferro-electric properties ([G02F 1/035](#), [G02F 1/055](#) take precedence {; domain inversion in ferro-electric materials [G02F 1/3558](#); ferro-electric digital stores [G11C 11/22](#))}
- 1/0508 {specially adapted for gating or modulating in optical waveguides}
- 1/0516 {Operation of the cell; Circuit arrangements}
- 1/0525 {addressed by a beam of charged particles, e.g. directed to an adjacent layer exhibiting secondary emission or bombardment-induced conductivity effect ([electrography](#), [electrophotography G03G](#); screens for cathode-ray tubes acting as light valves [H01J 29/12](#))}
- 1/0533 {structurally associated with a photo-conductive layer}
- 1/0541 {using photo-refractive effects ([holography G03H](#); electro-optical digital static stores using an interference pattern [G11C 13/044](#))}
- 1/055 . . . the active material being a ceramic ([G02F 1/035](#) takes precedence)
- 1/0551 {Constructional details}
- 1/0553 {specially adapted for gating or modulating in optical waveguides}
- 1/0555 {Operation of the cell; Circuit arrangements}
- 1/0556 {specially adapted for a particular application}
- 1/0558 {structurally associated with a photoconductive layer or exhibiting photo-refractive properties}
- 1/061 . . based on electro-optical organic material ([G02F 1/07](#), {[G02F 1/13](#) take precedence})
- 1/065 . . in an optical waveguide structure
- 1/07 . . based on electro-optical liquids exhibiting Kerr effect
- 1/073 . . . {specially adapted for gating or modulating in optical waveguides}
- 1/076 . . . {Operation of the cell; Circuit arrangements}
- 1/09 . . based on magneto-optical elements, e.g. exhibiting Faraday effect
- 1/091 . . . {based on magneto-absorption or magneto-reflection}
- 1/092 . . . {Operation of the cell; Circuit arrangements}
- 1/093 . . . {used as non-reciprocal devices, e.g. optical isolators, circulators ([G02F 1/0955](#) takes precedence)}
- 2001/094 . . . {Based on magnetophoretic effect}
- 1/095 . . . in an optical waveguide structure
- 1/0955 {used as non-reciprocal devices, e.g. optical isolators, circulators}
- 1/11 . . based on acousto-optical elements, e.g. using variable diffraction by sound or like mechanical waves ({[elasto-optic effect without wave propagation G02F 1/0131](#); } [acousto-optical deflection G02F 1/33](#))
- 1/113 . . . {Circuit or control arrangements}
- 1/116 . . . {using an optically anisotropic medium, wherein the incident and the diffracted light waves have different polarizations, e.g. acousto-optic tunable filter [AOTF] ([G02F 1/125](#) takes precedence)}
- 1/125 . . . in an optical waveguide structure
- 1/13 . . based on liquid crystals, e.g. single liquid crystal display cells ([liquid crystal materials C09K 19/00](#))
- 1/1303 . . . {Apparatus specially adapted to the manufacture of LCDs}
- 1/1306 . . . {Details}
- 1/1309 {Repairing; Testing ([testing of optical apparatus G01M 11/00](#); [electronic testing of displays or display drivers](#), e.g. of LCDs, [G09G 3/006](#))}
- 1/1313 . . . {specially adapted for a particular application}
- 2001/1316 . . . {Cleaning methods or materials for cleaning part of liquid crystal cell components during the manufacturing process}
- 1/132 . . . {Thermal activation of liquid crystals exhibiting a thermo-optic effect ([thermometers using change of colour or translucency of liquid crystals G01K 11/165](#); [thermally addressed liquid crystal elements in a matrix G09G 3/3603](#))}
- 1/1323 . . . {Arrangements for providing a switchable viewing angle}
- 1/1326 . . . {Liquid crystal optical waveguides or liquid crystal cells specially adapted for gating or modulating between optical waveguides}
- 1/133 . . . Constructional arrangements; Operation of liquid crystal cells; Circuit arrangements ([arrangements or circuits for control of liquid crystal elements in a {segment display or a} matrix, not structurally associated with these elements, {respectively G09G 3/18 and } G09G 3/36](#))
- 1/13306 {Circuit arrangements or driving methods for the control of single liquid crystal cells ([G02F 1/132](#), [G02F 1/133382](#) take precedence)}
- 2001/13312 {Circuits comprising a photodetector not for feedback}

1/13318	{Circuits comprising a photodetector}	1/133382	{Heating or cooling of liquid crystal cells other than for activation, e.g. circuits or arrangements for temperature control, stabilisation or uniform distribution over the cell}
2001/13324	{Circuits comprising a solar cell}	1/133385	{with cooling means, e.g. fans}
1/1333	Constructional arrangements; {Manufacturing methods} (G02F 1/135 , G02F 1/136 take precedence)	2001/133388	{Constructional difference between the display region and the peripheral region}
2001/133302	{rigid substrate, e.g. inorganic}	2001/133391	{Constructional arrangement for sub-divided displays}
1/133305	{Flexible substrates, e.g. plastics, organic film}	2001/133394	{Piezoelectric element associated with the cell}
1/133308	{LCD panel immediate support structure, e.g. front and back frame or bezel}	2001/133397	{for suppressing after-image or image-sticking}
2001/133311	{Environmental protection, e.g. dust, humidity}	1/1334	based on polymer dispersed liquid crystals, e.g. microencapsulated liquid crystals (compositions C09K 19/544)
2001/133314	{Back frame}	1/13342	{Holographic polymer dispersed liquid crystals}
2001/133317	{Intermediate frame, e.g. between backlight housing and front frame}	2001/13345	{Network or three-dimensional gel}
2001/13332	{Front frame}	2001/13347	{Reverse mode, i.e. clear in the off-state and scattering in the on-state}
2001/133322	{Mechanical guiding and alignment of LCD panel support components}	1/1335	Structural association of cells with optical devices, e.g. polarisers or reflectors
2001/133325	{Method of assembling (G02F 2201/465 takes precedence)}	1/133502	{Antiglare, refractive index matching layers}
2001/133328	{Segmented frame}	1/133504	{Diffusing, scattering, diffracting elements (associated to illuminating devices G02F 1/133606)}
2001/133331	{Cover glass}	2001/133507	{Luminance enhancement films}
2001/133334	{Electromagnetic shield}	1/133509	{Filters, e.g. light shielding masks (optical filters G02B 5/20)}
2001/133337	{Ion-diffusion preventing or absorbing layer}	1/133512	{Light shielding layers, e.g. black matrix (G02F 1/136209 takes precedence)}
1/13334	{Plasma addressed liquid crystal cells [PALC] (plasma panels H01J 17/49)}	1/133514	{Colour filters (luminescent elements G02F 1/133617)}
2001/133342	{for double side displays}	1/133516	{Methods of making thereof, e.g. printing, electro-deposition, photolithography (photomechanical production of textured or patterned surfaces G03F)}
1/133345	{Insulating layers (G02F 1/1335 , G02F 1/1337 , G02F 1/135 , G02F 1/136 take precedence)}	2001/133519	{overcoating}
1/133348	{Charged-particles, e.g. electron-beam, addressed liquid crystals cells (screen for cathode ray tubes acting as light valves H01J 29/12 ; electrography, electrophotography G03G)}	2001/133521	{Interference filters}
1/133351	{Manufacturing of individual cells out of a plurality of cells, e.g. by dicing}	1/133524	{Light-guides, e.g. fibre-optic bundles, louvered or jalousie light-guides}
2001/133354	{Arrangements for aligning or assembling the substrates}	1/133526	{Lenses, e.g. microlenses, Fresnel lenses (lenses in general G02B 3/00)}
2001/133357	{Planarisation layer}	1/133528	{Polarisers (polarisers per se G02B 5/30)}
1/13336	{Combining plural substrates to produce large-area displays, e.g. tiled displays}	2001/133531	{Special arrangement of polariser or analyser axes}
1/133362	{Optically addressed liquid crystal cells (G02F 1/135 takes precedence)}	1/133533	{Colour selective polarisers (G02F 1/1347 takes precedence)}
1/133365	{Cells in which the active layer comprises a liquid crystalline polymer (liquid crystalline polymers in general C09K 19/38)}	1/133536	{Reflective polarizers (G02F 1/13362 takes precedence)}
2001/133368	{cell having two substrates with different characteristic, e.g. hickness or material}	2001/133538	{with a spatial distribution of the polarisation direction}
1/133371	{Cells with varying thickness of the liquid crystal layer}	2001/133541	{Circular polarisers}
2001/133374	{for displaying permanent signs or marks}	2001/133543	{Cholesteric polarisers}
1/133377	{Cells with plural compartments or having plurality of liquid crystal microcells partitioned by walls, e.g. one microcell per pixel}	2001/133545	{Dielectric stack polarisers}
1/13338	{Input devices, e.g. touch-panels (specially adapted as input devices to computers G06F 3/033 ; touch-panels per se G06K 11/06 , keyboard switches per se H01H 13/70)}	2001/133548	{Wire-grid polarisers}
		2001/13355	{Polarising beam splitters [PBS]}

1/133553	{Reflecting elements (associated to illuminating devices G02F 1/133605)}	2001/133631	{with a spatial distribution of the retardation value}
1/133555	{Transflectors}	1/133632	{with refractive index ellipsoid inclined relative to the LC-layer surface}
2001/133557	{Half-mirror}	2001/133633	{using mesogenic materials}
2001/13356	{Particular location of the optical element}	1/133634	{the refractive index Nz perpendicular to the element surface being different from in-plane refractive indices Nx and Ny, e.g. biaxial or with normal optical axis}
2001/133562	{on the viewer side}	2001/133635	{Multifunctional compensators}
2001/133565	{inside the LC element, i.e. between the cell substrates}	1/133636	{with twisted orientation, e.g. comprising helically oriented LC-molecules or a plurality of twisted birefringent sublayers}
2001/133567	{on the back side}	2001/133637	{characterized by the wavelength dispersion}
1/1336	{Illuminating devices (in general F21V ; associated with display devices for electronic watches G04G 9/0041)}	2001/133638	{Waveplates, i.e. plates with a retardation value of λ/n }
2001/133601	{for spatial active dimming}	1/1337	Surface-induced orientation of the liquid crystal molecules, e.g. by alignment layers
1/133602	{Direct backlight}	1/133703	{by introducing organic surfactant additives into the liquid crystal material (C09K 19/56 takes precedence)}
1/133603	{with LEDs}	1/133707	{Structures for producing distorted electric fields, e.g. bumps, protrusions, recesses, slits in pixel electrodes}
1/133604	{with lamps}	1/133711	{by organic films, e.g. polymeric films}
1/133605	{including specially adapted reflectors}	2001/133715	{by first depositing a monomer}
1/133606	{including a specially adapted diffusing, scattering or light controlling members}	1/133719	{with coupling agent molecules, e.g. silane}
2001/133607	{the light controlling member including light directing or refracting elements, e.g. prisms or lenses}	1/133723	{Polyimide, polyamide-imide}
1/133608	{including particular frames or supporting means}	2001/133726	{made of a mesogenic material}
1/133609	{including means for improving the color mixing, e.g. white}	2001/13373	{Disclination line; Reverse tilt}
1/133611	{including means for improving the brightness uniformity}	1/133734	{by obliquely evaporated films, e.g. Si or SiO ₂ films}
2001/133612	{Electrical details}	2001/133738	{for homogeneous alignment}
2001/133613	{including a particular sequence of light sources}	2001/133742	{for homeotropic alignment}
2001/133614	{the light is generated by photoluminescence, e.g. a phosphor is illuminated by UV or blue light}	2001/133746	{for high pretilt angle, i.e. > 15 degrees}
1/133615	{Edge-illuminating devices, i.e. illuminating from the side (G02B 6/0001 takes precedence)}	2001/133749	{for low pretilt angle, i.e. < 15 degrees}
2001/133616	{Front illuminating devices}	1/133753	{with different alignment orientations or pretilt angles on a same surface, e.g. for grey scale or improved viewing angle}
1/133617	{Illumination with ultra-violet light; Luminescent elements or materials associated to the cell}	2001/133757	{with different alignment orientations}
2001/133618	{for ambient light}	2001/133761	{with different pretilt angles}
1/13362	{providing polarised light, e.g. by converting a polarisation component into another one (optical systems for polarising G02B 27/28)}	2001/133765	{without a surface treatment}
1/133621	{providing coloured light (G02F 1/133617 , G02F 1/133533 take precedence)}	2001/133769	{comprising an active, e.g. switchable alignment layer}
2001/133622	{colour sequential illumination}	2001/133773	{The alignment material or treatment is different for the two opposite substrates}
2001/133623	{Inclined coloured light beams}	2001/133776	{having structures, i.e. unevenness locally influencing the alignment}
2001/133624	{having a particular spectral emission}	1/13378	{by treatment of the surface, e.g. embossing, rubbing, light irradiation (G02F 1/133711 , G02F 1/133734 , G02F 1/133753 take precedence)}
2001/133625	{Electron stream lamps}	1/133784	{by rubbing}
2001/133626	{providing two modes of illumination, e.g. day-night}	1/133788	{by light irradiation, e.g. linearly polarised light photo-polymerisation}
2001/133627	{Projection-direct viewing}	2001/133792	{by etching}
2001/133628	{with cooling means}	2001/133796	{having conducting property}
1/13363	Birefringent elements, e.g. for optical compensation		

1/1339	Gaskets; Spacers; Sealing of cells	1/13475	{in which at least one liquid crystal cell or layer is doped with a pleochroic dye, e.g. GH-LC cell (G02F 1/13476 takes precedence)}
1/13392	{spacers dispersed on the cell substrate, e.g. spherical particles, microfibres}	1/13476	{in which at least one liquid crystal cell or layer assumes a scattering state}
1/13394	{spacers regularly patterned on the cell substrate, e.g. walls, pillars (G02F 1/13377 takes precedence)}	2001/13478	{based on selective reflection}
2001/13396	{Spacers having different sizes}	1/135	Liquid crystal cells structurally associated with a photoconducting or a ferro-electric layer, the properties of which can be optically or electrically varied (G02F 1/133348 takes precedence)}
2001/13398	{Materials and properties of the spacer}	2001/1351	{light-absorbing or blocking layer}
1/1341	Filling or closing of cells	2001/1352	{light-reflecting layer}
2001/13415	{Drop filling process}	1/1354	{having a particular photoconducting structure or material}
1/1343	Electrodes (reflective electrodes G02F 1/133553)}	2001/1355	{material or manufacturing process thereof}
1/134309	{characterised by their geometrical arrangement (G09F 9/302 takes precedence)}	2001/1357	{electrode structure}
2001/134318	{having a patterned common electrode}	1/1358	{the supplementary layer being a ferro-electric layer}
1/134327	{Segmented, e.g. alpha numeric display}	1/136	Liquid crystal cells structurally associated with a semi-conducting layer or substrate, e.g. cells forming part of an integrated circuit (G02F 1/135 takes precedence)}
1/134336	{Matrix}	2001/13606	{having means for reducing parasitic capacitance}
2001/134345	{Subdivided pixels, e.g. grey scale, redundancy}	2001/13613	{the semiconductor element is formed on a first substrate and thereafter transferred to the final cell substrate}
2001/134354	{the sub-pixels being capacitively coupled}	1/1362	Active matrix addressed cells (G02F 1/134336, G02F 1/134363 take precedence)}
1/134363	{for applying an electric field parallel to the substrate, i.e. in-plane switching [IPS]}	1/136204	{Arrangements to prevent high voltage or static electricity failures}
2001/134372	{for fringe field switching [FFS] where the common electrode is not patterned, e.g. planar}	1/136209	{Light shielding layers, e.g. black matrix, incorporated in the active matrix substrate, e.g. structurally associated with the switching element}
2001/134381	{Hybrid switching mode, i.e. for applying an electric field both parallel and orthogonal to the substrates}	1/136213	{Storage capacitors associated with the pixel electrode}
1/13439	{characterised by their electrical, optical, physical properties; materials therefor; method of making}	2001/136218	{Shield electrode}
1/1345	Conductors connecting electrodes to cell terminals	2001/136222	{Color filter incorporated in the active matrix substrate}
1/13452	{Conductors connecting driver circuitry and terminals of panels (H01L 21/00 takes precedence ; electrical details inside the cell G02F 1/133;)}	1/136227	{Through-hole connection of the pixel electrode to the active element through an insulation layer}
1/13454	{Drivers integrated on the active matrix substrate (G02F 1/136277 takes precedence)}	2001/136231	{for reducing the number of lithographic steps}
2001/13456	{cell terminals on one side of the display only}	2001/136236	{using a gray or half tone lithographic process}
1/13458	{Terminal pads}	1/13624	{having more than one switching element per pixel}
1/1347	Arrangement of liquid crystal layers or cells in which the final condition of one light beam is achieved by the addition of the effects of two or more layers or cells (colour projection displays with liquid crystal valves H04N 9/3197)}	2001/136245	{having complementary transistors}
1/13471	{in which all the liquid crystal cells or layers remain transparent, e.g. FLC, ECB, DAP, HAN, TN, STN, SBE-LC cells (G02F 1/13475 takes precedence)}	2001/13625	{Patterning using a multi-mask exposure}
1/13473	{for wavelength filtering or for colour display without the use of colour mosaic filters}	2001/136254	{Checking; Testing}
		1/136259	{Repairing; Defects}
		2001/136263	{Line defect}
		2001/136268	{Switch defect}
		2001/136272	{Auxiliary line}
		1/136277	{formed on a semiconductor substrate, e.g. silicon}

- 2001/136281 {having a transmissive semiconductor substrate}
- 1/136286 {Wiring, e.g. gate line, drain line}
- 2001/13629 {Multi-layer wirings}
- 2001/136295 {Materials; Compositions; Methods of manufacturing}
- 1/1365 in which the switching element is a two-electrode device {(G02F 1/136277 takes precedence)}
- 1/1368 in which the switching element is a three-electrode device {(G02F 1/136277 takes precedence)}
- 2001/13685 {Top gate}
- 1/137 . . . characterised by the electro-optical or magneto-optical effect, e.g. field-induced phase transition, orientation effect, guest-host interaction or dynamic scattering
- 2001/13706 {the LC having positive dielectric anisotropy}
- 2001/13712 {the LC having negative dielectric anisotropy}
- 1/13718 {based on a change of the texture state of a cholesteric liquid crystal}
- 1/13725 {based on guest-host interaction (G02F 1/13762, G02F 1/13737, take precedence)}
- 1/13731 {based on a field-induced phase transition (G02F 1/13781 takes precedence)}
- 1/13737 {in liquid crystals doped with a plechroic dye}
- 1/13743 {based on electrohydrodynamic instabilities or domain formation in liquid crystals}
- 1/1375 {using dynamic scattering}
- 2001/13756 {the liquid crystal selectively assuming a light-scattering state (G02F 1/1334, G02F 1/13718 take precedence)}
- 1/13762 {containing luminescent or electroluminescent additives (luminescent materials in general C09K 11/00; compositions of liquid crystals comprising additives C09K 19/52 - C09K 19/603; electroluminescent light sources H05B 33/00)}
- 1/13768 {based on magneto-optical effects}
- 2001/13775 {Polymer stabilized liquid crystal layers}
- 1/13781 {using smectic liquid crystals (G02F 1/141 takes precedence)}
- 2001/13787 {Hybrid alignment cells (G02F 1/1393 takes precedence)}
- 2001/13793 {Blue phases}
- 1/139 based on orientation effects in which the liquid crystal remains transparent
- 1/1391 {Bistable or multi-stable liquid crystal cells (G02F 1/141 takes precedence)}
- 1/1392 {using a field-induced sign-reversal of the dielectric anisotropy}
- 1/1393 {the birefringence of the liquid crystal being electrically controlled, e.g. ECB-, DAP-, HAN-, PI-LC cells (G02F 1/1396, G02F 1/141 take precedence)}
- 1/1395 {Optically compensated birefringence [OCB]- cells or PI- cells}
- 1/1396 {the liquid crystal being selectively controlled between a twisted state and a non-twisted state, e.g. TN-LC cell (G02F 1/141 takes precedence)}
- 1/1397 {the twist being substantially higher than 90°, e.g. STN-, SBE-, OMI-LC cells}
- 2001/1398 {the twist being below 90°C}
- 1/141 using ferroelectric liquid crystals
- 2001/1412 {Antiferroelectric liquid crystals}
- 2001/1414 {Deformed helix ferroelectric [DHL]}
- 1/1416 {Details of the smectic layer structure, e.g. bookshelf, chevron, C1 and C2}
- 1/1418 {using smectic liquid crystals, e.g. based on the electroclinic effect}
- 1/15 . . . based on an electrochromic effect
- WARNING**
- Group G02F 1/15 is impacted by reclassification into groups G02F 1/1514 and G02F 1/1516.
- All groups listed in this Warning should be considered in order to perform a complete search.
- 2001/1502 . . . {complementary cell}
- 2001/15025 . . . {having an inorganic electrochromic layer and a second solid organic electrochromic layer}
- 1/1503 . . . caused by oxidation-reduction reactions in organic liquid solutions, e.g. viologen solutions
- 1/1506 . . . caused by electrodeposition, e.g. electrolytic deposition of an inorganic material on or close to an electrode
- 1/1508 . . . {using a solid electrolyte}
- 1/1514 . . . characterised by the electrochromic material, e.g. by the electrodeposited material
- WARNING**
- Group G02F 1/1514 is incomplete pending reclassification of documents from group G02F 1/15.
- Groups G02F 1/15 and G02F 1/1514 should be considered in order to perform a complete search.
- 2001/15145 . . . {the electrochromic layer comprises a mixture of anodic and cathodic compounds}
- 1/1516 . . . comprising organic material
- WARNING**
- Group G02F 1/1516 is incomplete pending reclassification of documents from group G02F 1/15.
- Groups G02F 1/15 and G02F 1/1516 should be considered in order to perform a complete search.
- 1/15165 . . . {Polymers}
- 2001/1517 . . . {Cyano complex compounds, e.g. Prussian blue}
- 2001/1518 . . . {Ferrocene compounds}

1/1523 comprising inorganic material

WARNING

Group [G02F 1/1523](#) is impacted by reclassification into group [G02F 1/1524](#).

Groups [G02F 1/1523](#) and [G02F 1/1524](#) should be considered in order to perform a complete search.

1/1524 Transition metal compounds

WARNING

Group [G02F 1/1524](#) is incomplete pending reclassification of documents from group [G02F 1/1523](#).

Groups [G02F 1/1523](#) and [G02F 1/1524](#) should be considered in order to perform a complete search.

1/15245 {based on iridium oxide or hydroxide}

1/1525 {characterised by a particular ion transporting layer, e.g. electrolyte}

1/153 . . . Constructional details

1/1533 {structural features not otherwise provided for}

2001/1536 {additional, e.g. protective, layer inside the cell}

1/155 Electrodes

2001/1552 {Inner electrode, e.g. the electrochromic layer being sandwiched between the inner electrode and the support substrate---- this group, now to be changed, should already been created by implementation of a previous DOC14 (prior to the one referred to above)----}

2001/1555 {Counter electrode}

2001/1557 {Side by side arrangements of working and counter electrodes}

1/157 Structural association of cells with optical devices, e.g. reflectors or illuminating devices

1/161 Gaskets; Spacers; Sealing of cells; Filling or closing of cells

1/163 . . . Operation of electrochromic cells, e.g. electrodeposition cells; Circuit arrangements therefor

2001/1635 {the pixel comprises active switching elements, e.g. TFT}

2001/164 . . . {the electrolyte is made of polymers}

1/165 . . based on translational movement of particles in a fluid under the influence of an applied field

WARNING

Group [G02F 1/165](#) is incomplete pending reclassification of documents from groups [G02F 1/01](#), [G02F 1/17](#), and [G02F 1/19](#).

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

1/166 characterised by the electro-optical or magneto-optical effect

WARNING

Group [G02F 1/166](#) is incomplete pending reclassification of documents from group [G02F 1/01](#), [G02F 1/17](#), and [G02F 1/19](#).

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

1/167 by electrophoresis

WARNING

Group [G02F 1/167](#) is impacted by reclassification into groups [G02F 1/1675](#), [G02F 1/16753](#), [G02F 1/16755](#), [G02F 1/16756](#), [G02F 1/16757](#), [G02F 1/1677](#), [G02F 1/1679](#), and [G02F 1/1685](#).

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

1/1671 involving dry toners

1/1673 by magnetophoresis

WARNING

Group [G02F 1/1673](#) is incomplete pending reclassification of documents from group [G02F 1/01](#), [G02F 1/17](#), and [G02F 1/19](#).

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

1/1675 . . . Constructional details

WARNING

Group [G02F 1/1675](#) is incomplete pending reclassification of documents from group [G02F 1/167](#), [G02F 1/17](#), and [G02F 1/19](#).

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

1/16753 Structures for supporting or mounting cells, e.g. frames or bezels

WARNING

Group [G02F 1/16753](#) is incomplete pending reclassification of documents from group [G02F 1/167](#), [G02F 1/17](#), and [G02F 1/19](#).

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

1/16755 Substrates

WARNING

Group [G02F 1/16755](#) is incomplete pending reclassification of documents from group [G02F 1/167](#), [G02F 1/17](#), and [G02F 1/19](#).

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

1/16756 Insulating layers

WARNING

Group [G02F 1/16756](#) is incomplete pending reclassification of documents from group [G02F 1/167](#), [G02F 1/17](#), and [G02F 1/19](#).

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

1/16757 Microcapsules

WARNING

Group [G02F 1/16757](#) is incomplete pending reclassification of documents from group [G02F 1/167](#), [G02F 1/17](#), and [G02F 1/19](#).

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

1/1676 Electrodes

WARNING

Group [G02F 1/1676](#) is impacted by reclassification into groups [G02F 1/16761](#), [G02F 1/16762](#), and [G02F 1/16766](#).

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

1/16761 Side-by-side arrangement of working electrodes and counter-electrodes

WARNING

Group [G02F 1/16761](#) is incomplete pending reclassification of documents from group [G02F 1/1676](#).

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

1/16762 having three or more electrodes per pixel

WARNING

Group [G02F 1/16762](#) is incomplete pending reclassification of documents from group [G02F 1/1676](#).

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

1/16766 for active matrices

WARNING

Group [G02F 1/16766](#) is incomplete pending reclassification of documents from group [G02F 1/1676](#).

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

1/1677 Structural association of cells with optical devices, e.g. reflectors or illuminating devices

WARNING

Group [G02F 1/1677](#) is incomplete pending reclassification of documents from group [G02F 1/167](#), [G02F 1/17](#), and [G02F 1/19](#).

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

2001/1678 {characterised by the composition or particle type}

1/1679 Gaskets; Spacers; Sealing of cells; Filling or closing of cells

WARNING

Group [G02F 1/1679](#) is incomplete pending reclassification of documents from group [G02F 1/167](#), [G02F 1/17](#), and [G02F 1/19](#).

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

1/1681 having two or more microcells partitioned by walls, e.g. of microcup type

1/1685 Operation of cells; Circuit arrangements affecting the entire cell

WARNING

Group [G02F 1/1685](#) is incomplete pending reclassification of documents from group [G02F 1/167](#), [G02F 1/17](#), and [G02F 1/19](#).

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

1/169 . . . based on orientable non-spherical particles having a common optical characteristic, e.g. suspended particles of reflective metal flakes

WARNING

Group [G02F 1/169](#) is incomplete pending reclassification of documents from groups [G02F 1/17](#) and [G02F 1/19](#).

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

- 1/17 . . . based on variable-absorption elements not provided for in groups [G02F 1/015](#) - [G02F 1/169](#)
- WARNING**
- Group [G02F 1/17](#) is impacted by reclassification into group [G02F 1/165](#), [G02F 1/166](#), [G02F 1/1673](#), [G02F 1/1675](#), [G02F 1/16753](#), [G02F 1/16755](#), [G02F 1/16756](#), [G02F 1/16757](#), [G02F 1/1677](#), [G02F 1/1679](#), [G02F 1/1685](#), [G02F 1/169](#).
- All groups listed above should be considered in order to perform a complete search.
- 1/172 . . . {based on a suspension of orientable dipolar particles, e.g. suspended particles displays}
- 1/174 . . . {based on absorption band-shift, e.g. Stark - or Franz-Keldysh effect ([G02F 1/015](#), [G02F 1/178](#) take precedence)}
- 1/176 . . . {using acid- based indicators}
- 1/178 . . . {based on pressure effects ([G02F 1/195](#) takes precedence)}
- 1/19 . . . based on variable-reflection or variable-refraction elements not provided for in groups [G02F 1/015](#) - [G02F 1/169](#)
- WARNING**
- Group [G02F 1/19](#) is impacted by reclassification into group [G02F 1/165](#), [G02F 1/166](#), [G02F 1/1673](#), [G02F 1/1675](#), [G02F 1/16753](#), [G02F 1/16755](#), [G02F 1/16756](#), [G02F 1/16757](#), [G02F 1/1677](#), [G02F 1/1679](#), [G02F 1/1685](#), [G02F 1/169](#).
- All groups listed above should be considered in order to perform a complete search.
- 1/195 . . . {by using frustrated reflection (digital reflection using controlled total internal reflection [G02F 1/315](#))}
- 1/21 . . . by interference
- 2001/211 . . . {Sagnac type}
- 2001/212 . . . {Mach-Zehnder type}
- 2001/213 . . . {Fabry-Perot type}
- 2001/215 . . . {Michelson type}
- 1/216 . . . {using liquid crystals, e.g. liquid crystal Fabry-Perot filters}
- 2001/217 . . . {Multi mode interference type}
- 1/218 . . . {using semi-conducting materials}
- 1/225 . . . in an optical waveguide structure
- 1/2252 {in optical fibres}
- 1/2255 {controlled by a high-frequency electromagnetic component in an electric waveguide structure}
- 1/2257 {the optical waveguides being made of semiconducting material}
- 1/23 . . . for the control of the colour ([G02F 1/03](#) - [G02F 1/21](#) take precedence)
- 1/25 . . . as to hue or predominant wavelength
- 1/29 . . . for the control of the position or the direction of light beams, i.e. deflection ({optical coupling means [G02B 6/26](#); optical-mechanical scanning in general [G02B 26/10](#)) ; static stores with electric or magnetic read-in and optical read-out [G11C](#); lasers provided with means to change the location from which, or the direction in which, laser radiation is emitted [H01S 3/101](#))
- 2001/291 . . . {Two-dimensional analog deflection}
- 1/292 . . . {by controlled diffraction or phased-array beam steering ([controlled diffraction for optical switching G02F 1/31](#))}
- 1/293 . . . {by another light beam, i.e. opto-optical deflection}
- 2001/294 . . . {Variable focal length device}
- 1/295 . . . {Analog deflection from or} in an optical waveguide structure]
- 1/2955 {by controlled diffraction or phased-array beam steering ([controlled diffraction for optical waveguide switching G02F 1/313](#))}
- 1/31 . . . Digital deflection, {i.e. optical switching} ([G02F 1/33](#) takes precedence)
- 2001/311 {Cascade arrangement of plural switches}
- 1/313 in an optical waveguide structure
- 1/3131 {in optical fibres}
- 1/3132 {of directional coupler type ([all-optical modulation, gating or switching using a non-linear directional coupler G02F 1/3521](#))}
- 1/3133 {the optical waveguides being made of semiconducting materials}
- 1/3134 {controlled by a high-frequency electromagnetic wave component in an electric waveguide structure}
- 2001/3135 {vertical structure}
- 1/3136 {of interferometric switch type}
- 1/3137 {with intersecting or branching waveguides, e.g. X-switches and Y-junctions}
- 1/3138 {the optical waveguides being made of semiconducting materials}
- 1/315 based on the use of controlled internal reflection
- 1/33 . . . Acousto-optical deflection devices {(circuit or control arrangements therefor [G02F 1/113](#))}
- 1/332 {comprising a plurality of transducers on the same crystal surface, e.g. multi-channel Bragg cell}
- 1/335 having an optical waveguide structure
- 1/35 . . . Non-linear optics ([optical bistable devices G02F 3/02](#); lasers using stimulated Brillouin or Raman effect [H01S 3/30](#))
- 1/3501 . . . {Constructional arrangements of non-linear optical devices, e.g. shape of non-linear crystals ([constructional arrangements of electro-optic devices G02F 1/0305](#))}
- 2001/3503 {Structural association of optical elements, e.g. lenses, with the nonlinear optical device}
- 2001/3505 {Coatings; Housings; Supports}
- 2001/3507 {Arrangements comprising two or more nonlinear optical devices}
- 2001/3509 {Shape, e.g. shape of end face}
- 1/3511 . . . {Self-focusing or self-trapping of light; Light-induced birefringence; Induced optical Kerr-effect ([photorefractive effects of electro-optic crystals G02F 1/0338](#), [G02F 1/0541](#), of ceramics [G02F 1/0558](#); opto-optical modulation [G02F 1/0126](#); opto-optical deflection [G02F 1/293](#))}
- 1/3513 {Soliton propagation}
- 1/3515 . . . {All-optical modulation, gating, switching, e.g. control of a light beam by another light beam ([G02F 1/353](#), [G02F 1/37](#), [G02F 1/39](#) take precedence)}

1/3517	. . . {using an interferometer}	1/37	. . for second-harmonic generation {(G02F 1/3532 takes precedence)}
1/3519	. . . . {of Sagnac type, i.e. nonlinear optical loop mirror [NOLM]}	2001/372	. . . {means for homogenizing the output beam}
1/3521	. . . {using a directional coupler}	2001/374	. . . {Cerenkov radiation}
1/3523	. . {Non-linear absorption changing by light, e.g. bleaching (laser Q-switching using bleachable media H01S 3/113)}	1/377	. . . in an optical waveguide structure
1/3525	. . {Optical damage}	1/3775	. . . . {with a periodic structure, e.g. domain inversion, for quasi-phase-matching [QPM] (G02F 1/383 takes precedence)}
1/3526	. . {using two-photon emission or absorption processes (Raman effect H01S 3/30)}	1/383	. . . . of the optical fibre type
2001/3528	. . {for producing a supercontinuum}	1/39	. . for parametric generation or amplification of light, infra-red or ultra-violet waves (G02F 1/3532 takes precedence;) electrical parametric amplifiers H03F 7/00)
1/353	. . {Frequency conversion, i.e. wherein a light beam with frequency components different from those of the incident light beams is generated (second harmonic generation G02F 1/37 ; optical parametric generation or amplification G02F 1/39 ; transferring the modulation of modulated light G02F 2/004 ; optical pumping of a laser by another laser H01S 3/094 ; nonlinear optical devices inside a laser cavity H01S 3/108)}	2001/392	. . . {Parametric amplification}
1/3532	. . . {Arrangements of plural nonlinear devices for generating multi-colour light beams, e.g. arrangements of SHG, SFG, OPO devices for generating RGB light beams}	1/395	. . . {in optical waveguides}
1/3534	. . . {Three-wave interaction, e.g. sum-difference frequency generation (G02F 1/3532 takes precedence)}	1/397	. . . {Amplification of light by wave mixing involving an interference pattern, e.g. using photorefractive material}
1/3536	. . . {Four-wave interaction}	2/00	Demodulating light; Transferring the modulation of modulated light; Frequency-changing of light (G02F 1/35 takes precedence; photoelectric detecting or measuring devices G01J , H01J 40/00 , H01L 31/00 ; demodulating laser arrangements {, e.g. switching, gating} H01S 3/10 ; demodulation or transference of modulation of modulated electro-magnetic waves in general H03D 9/00)
1/3538	. . . . {for optical phase conjugation (H01S 3/10076 takes precedence)}	2/002	. {using optical mixing (homodyne, heterodyne systems H04B 10/142)}
2001/354	. . . {Third or higher harmonic generation}	2/004	. {Transferring the modulation of modulated light, i.e. transferring the information from one optical carrier of a first wavelength to a second optical carrier of a second wavelength, e.g. all-optical wavelength converter}
2001/3542	. . . {Multi-pass arrangements, i.e. arrangements to pass light a plurality of times through the same element, e.g. by using an enhancement cavity}	2002/006	. . {All-optical wavelength conversion}
1/3544	. . . {Particular phase matching techniques}	2002/008	. . {Opto-electronic wavelength conversion, i.e. involving photo-detection of the first optical carrier}
2001/3546	. . . . {Active phase matching, e.g. by electro- or thermo-optic tuning}	2/02	. Frequency-changing of light, e.g. by quantum counters (luminescent materials C09K 11/00)
2001/3548	. . . . {Quasi-phase-matching [QPM], e.g. using a periodic domain inverted structure}	3/00	Optical logic elements ({ optical computing G06E }; electric pulse generators using opto-electronic devices as active elements H03K 3/42 ; logic circuits using opto-electronic devices H03K 19/14); Optical bistable devices
1/355	. . characterised by the materials used	3/02	. Optical bistable devices
1/3551	. . . {Crystals}	3/022	. . {based on electro-, magneto- or acousto-optical elements (G02F 3/028 takes precedence)}
1/3553	. . . . {having the formula MTiOYO4, where M=K, Rb, TI, NH4 or Cs and Y=P or As, e.g. KTP}	3/024	. . {based on non-linear elements, e.g. non-linear Fabry-Perot cavity (G02F 3/028 takes precedence)}
1/3555	. . . {Glasses}	3/026	. . {based on laser effects}
1/3556	. . . {Semiconductor materials, e.g. quantum wells}	3/028	. . {based on self electro-optic effect devices [SEED]}
1/3558	. . . {Poled materials, e.g. with periodic poling; Fabrication of domain inverted structures, e.g. for quasi-phase-matching [QPM]}	7/00	Optical analogue/digital converters
1/361	. . . Organic materials	NOTE	This group covers only converters based in substantial manner on elements which are provided for in group G02F 1/00 .
1/3611	. . . . {containing Nitrogen}	2201/00	Constructional arrangements not provided for in groups G02F 1/00 - G02F 7/00
1/3612	. . . . . {Heterocycles having N as heteroatom}	2201/02	. fibre
1/3613	. . . . . {containing Sulfur}		
1/3614	. . . . . {Heterocycles having S as heteroatom}		
1/3615	. . . . . {containing polymers}		
1/3616	. . . . . {having the non-linear optical group in the main chain}		
1/3617	. . . . . {having the non-linear optical group in a side chain}		
1/3618	. . . . {Langmuir Blodgett Films}		
1/3619	. . . . {Organometallic compounds}		
1/365	. . in an optical waveguide structure (G02F 1/377 , G02F 1/395 take precedence)		

2201/04	. monomode	2202/00	Materials and properties
2201/05	. multimode	2202/01	. dipole
2201/06	. integrated waveguide	2202/02	. organic material
2201/063	. . ridge; rib; strip loaded	2202/021	. . low molecular weight
2201/066	. . channel; buried	2202/022	. . polymeric
2201/07	. buffer layer	2202/023	. . . curable
2201/08	. light absorbing layer	2202/025	. . . . thermocurable
2201/083	. . infra-red absorbing	2202/026	. . charge transfer complex
2201/086	. . UV absorbing	2202/027	. . Langmuir-Blodgett film
2201/12	. electrode	2202/028	. . photobleached
2201/121	. . common or background	2202/04	. dye
2201/122	. . having a particular pattern	2202/043	. . pleochroic
2201/123	. . pixel	2202/046	. . fluorescent
2201/124	. . interdigital	2202/06	. dopant
2201/125	. . delta-beta	2202/07	. poled
2201/126	. . push-pull	2202/08	. glass transition temperature
2201/127	. . travelling wave	2202/09	. inorganic glass
2201/128	. . field shaping	2202/10	. semiconductor
2201/14	. asymmetric	2202/101	. . Ga \times As and alloy
2201/15	. periodic	2202/102	. . In \times P and alloy
2201/16	. series; tandem	2202/103	. . a-Si
2201/17	. Multi-pass arrangements, i.e. arrangements to pass light a plurality of times through the same element, e.g. by using an enhancement cavity	2202/104	. . poly-Si
2201/18	. parallel	2202/105	. . single crystal Si
2201/20	. delay line	2202/106	. . Cd \times Se or Cd \times Te and alloys
2201/205	. . of fibre type	2202/107	. . Zn \times S or Zn \times Se and alloys
2201/30	. grating	2202/108	. . quantum wells
2201/302	. . grating coupler	2202/12	. photoconductor
2201/305	. . diffraction grating	2202/13	. photorefractive
2201/307	. . Reflective grating, i.e. Bragg grating	2202/14	. photochromic
2201/34	. reflector	2202/16	. conductive
2201/343	. . cholesteric liquid crystal reflector	2202/20	. LiNbO ₃ , LiTaO ₃
2201/346	. . distributed (Bragg) reflector	2202/22	. Antistatic materials or arrangements
2201/36	. Airflow channels, e.g. constructional arrangements facilitating the flow of air	2202/28	. Adhesive materials or arrangements
2201/38	. Anti-reflection arrangements	2202/30	. Metamaterials
2201/40	. Arrangements for improving the aperture ratio	2202/32	. Photonic crystals
2201/42	. Arrangements for providing conduction through an insulating substrate	2202/34	. Metal hydrides materials
2201/44	. Arrangements combining different electro-active layers, e.g. electrochromic, liquid crystal or electroluminescent layers	2202/36	. Micro- or nanomaterials
2201/46	. Fixing elements	2202/38	. Sol-gel materials
2201/465	. . Snap -fit	2202/40	. Materials having a particular birefringence, retardation
2201/48	. Flattening arrangements	2202/42	. Materials having a particular dielectric constant
2201/50	. Protective arrangements	2202/99	. Test HW
2201/501	. . Blocking layers, e.g. against migration of ions	2203/00	Function characteristic
2201/503	. . Arrangements improving the resistance to shock	2203/01	. transmissive
2201/505	. . Arrangements improving the resistance to acoustic resonance like noise	2203/02	. reflective
2201/506	. . Repairing, e.g. with redundant arrangement against defective part	2203/023	. . total internal reflection
2201/508	. . . Pseudo repairing, e.g. a defective part is brought into a condition in which it does not disturb the functioning of the device	2203/026	. . attenuated or frustated internal reflection
2201/52	. RGB geometrical arrangements	2203/03	. scattering
2201/54	. Arrangements for reducing warping-twist	2203/04	. wavelength independent
2201/56	. Substrates having a particular shape, e.g. non-rectangular	2203/05	. wavelength dependent
2201/58	. Arrangements comprising a monitoring photodetector	2203/055	. . wavelength filtering
		2203/06	. Polarisation independent
		2203/07	. Polarisation dependent
		2203/09	. transfective
		2203/10	. plasmon
		2203/11	. involving infrared radiation
		2203/12	. spatial light modulator
		2203/13	. involving THZ radiation
		2203/15	. involving resonance effects, e.g. resonantly enhanced interaction
		2203/16	. involving spin polarization effects

G02F

- 2203/17 . involving soliton waves
- 2203/18 . adaptive optics, e.g. wavefront correction
- 2203/19 . linearised modulation; reduction of harmonic distortions
- 2203/20 . Intrinsic phase difference, i.e. optical bias, of an optical modulator; Methods for the pre-set thereof
- 2203/21 . Thermal instability, i.e. DC drift, of an optical modulator; Arrangements or methods for the reduction thereof
- 2203/22 . diffractive
- 2203/24 . beam steering
- 2203/25 . Frequency chirping of an optical modulator; Arrangements or methods for the pre-set or tuning thereof
- 2203/255 . . Negative chirp
- 2203/26 . Pulse shaping; Apparatus or methods therefor
- 2203/28 . focussing or defocussing
- 2203/30 . Gray scale
- 2203/34 . Colour display without the use of colour mosaic filters
- 2203/48 . Variable attenuator
- 2203/50 . Phase-only modulation
- 2203/52 . Optical limiters
- 2203/54 . Optical pulse train (comb) synthesizer
- 2203/56 . Frequency comb synthesizer
- 2203/58 . Multi-wavelength, e.g. operation of the device at a plurality of wavelengths
- 2203/585 . . Add/drop devices
- 2203/60 . Temperature independent
- 2203/62 . Switchable arrangements whereby the element being usually not switchable
- 2203/64 . Normally black display, i.e. the off state being black
- 2203/66 . Normally white display, i.e. the off state being white
- 2203/68 . Green display, e.g. recycling, reduction of harmful substances
- 2203/69 . Arrangements or methods for testing or calibrating a device
- 2203/70 . Semiconductor optical amplifier [SOA] used in a device covered by [G02F](#)
- 2413/00 Indexing scheme related to [G02F 1/13363](#), i.e. to birefringent elements, e.g. for optical compensation, characterised by the number, position, orientation or value of the compensation plates**
- 2413/01 . Number of plates being 1
- 2413/02 . Number of plates being 2
- 2413/03 . Number of plates being 3
- 2413/04 . Number of plates greater than or equal to 4
- 2413/05 . Single plate on one side of the LC cell
- 2413/06 . Two plates on one side of the LC cell
- 2413/07 . All plates on one side of the LC cell
- 2413/08 . with a particular optical axis orientation
- 2413/09 . with a spatial distribution of the retardation value
- 2413/10 . with refractive index ellipsoid inclined, or tilted, relative to the LC-layer surface O plate
- 2413/105 . . with varying inclination in thickness direction, e.g. hybrid oriented discotic LC
- 2413/11 . The refractive index Nz perpendicular to the element surface being different from in-plane refractive indices Nx and Ny, e.g. C plate
- 2413/12 . Biaxial compensators
- 2413/13 . Positive birefringence
- 2413/14 . Negative birefringence
- 2413/15 . with twisted orientation, e.g. comprising helically oriented LC-molecules or a plurality of twisted birefringent sublayers