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203

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6 201

107 1501

(74)

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(54)

(biaxial retardation compensation film)

,

(n_x, n_y) (n_z) n_x > n_y > n_z , 가

가

가 ,

30nm 150nm

VA-LCD (black state) ,

1	1	VA-LCD	.
2	2	VA-LCD	.
3			.
4			.
5		VA-LCD (black state)	(
a)		VA-LCD (b)	
6	45 °	0 ° ~ 70 °	2 °
		VA-LCD (black)	(a)
	VA-LCD	(b)	.
7		VA-LCD	(a)
		VA-LCD (b)	.
8		1	VA-LCD
9		0 ° ~ 80 °	1
CD		.	VA-L
10	45 °	0 ° ~ 80 °	2 °
	VA-LCD	(black)	1
11		0 ° ~ 80 °	2
		.	VA-LCD
12	45 °	0 ° ~ 80 °	2 °
VA-LCD		(black)	.

* *

11,12 : 11c,12c, :
13 : 14,14a,14b :
14c :

(Vertically aligned liquid crystal display; VA-LCD)
VA-LCD
(Achromatic) VA-LCD .

가, VA-LCD (Black state) -C-plate
 A-plate, -C-plate VA-LCD
 4,889,412
 -C-Plate VA-LCD

, -C-Plate A-Plate VA-LCD
 6,141,075

-C-Plate (Black) A-Plate VA-LCD 가 VA-LCD

D, VA-LCD, VA-LC
 (Achromatic) VA-LCD

(n_z) $n_x > n_y > n_z$, 가, x y (n_x, n_y)
 sed wavelength dispersion) 가 ($R_{in} = d \times (n_x - n_y)$, d) 가 (rever
 가 가 (normal wavelengt
 h dispersion) ($R_{th} = (n_z - n_y) \times d$, d)

, 400nm, 550nm, 700nm $R_{in,400}$, $R_{in,550}$, $R_{in,700}$
 $R_{in,400} / R_{in,550}$ 0.4 0.9
 00, 400nm, 550nm $R_{in,700} / R_{in,550}$ 1.1 1.8 가
 550nm, 700nm

, (R_{in}) 550nm 30nm 150nm 가

, 400nm, 550nm, 700nm $R_{th,400}$, $R_{th,550}$, $R_{th,700}$
 $R_{th,400} / R_{th,550}$ 1.05 1.4
 th,700, 400nm, 550nm $R_{th,700} / R_{th,550}$ 0.5 0.95 가
 550nm, 700nm

, (R_{th}) 550nm -50nm -500nm 가

2 (monomer) , 1 (monomer)
 (co-polymerization)

2 (monomer) , 1 (monomer)

, (R_{in}) (R_{th})

, , ($\epsilon < 0$) ($\epsilon > 0$)

$8\mu\text{m}$ (VA-LCD) , (MVA) 가 (chiral additive) (n_x, n_y) (n_z)
 $n_x > n_y > n_z$, , (Optical Axis) 가 (reversed
wavelength dispersion) , 가 가 , 가 ,
(normal wavelength dispersion) 가 , 30nm 150nm
, 가 , 75 90 (pretilt angle) 가 ,
87~90 89~90 가 .
, 550nm , 80nm 400nm
, 80nm~300nm .
, 가 (director)
45 .
, .
1 2 VA-LCD (13),
(11,12), (VA) (14,14a,14b) VA-LCD (11,12)
TAC(triacetate cellulose)
1 (a) (b) (14) 1 (13) VA-LCD ,
(11,12) 3-8 μm 1
1 (a) 1 가 , 1 (14) (13) (11)
(11c) , (14) (14c) (11)
1 (b) 1 , (14) (13) (12)
(12c) , (14) (14c) (12)
2 (14a, 14b) (13) VA-LCD ,
(11, 12) 3-8 μm 2 (11)
, 2 (14a) (13) (12) (14a) (14c)
(14b) (11) (13) (12) (14a) (14c)
(11) (13) (11) (13) (12) (14a) (14c)
(11c) (14b) (14c) (12) (12c)
3 (bi-axial retardation compensation film)
3 , (14) $n_x > n_y > n_z$,
, n_x x , n_y y , n_z

(in-plane retardation value, $R_{in} = d \times (n_x - n_y)$, d (reversed wavelength dispersion)) 가 가

($R_{th} = d \times (n_z - n_y)$, d) (normal wavelength dispersion) 가 가

4 $(R_{th, \lambda} / R_{th, 550})$, $(R_{in, \lambda} / R_{in, 550})$,

4 , 400nm, 550nm $(R_{in, 400} / R_{in, 550})$ 0.4 0.9 가 , $(R_{in, 700} / R_{in, 550})$ 1.1 1.8 가 , $R_{in, 400}$ 400nm , $R_{in, 550}$ 550nm , $R_{in, 700}$ 700nm , R

$R_{in, 550} = d \times (n_x - n_y)$ 550nm 30nm 150nm .

550nm $(R_{th, 400} / R_{th, 550})$ 1.05 1.4 가 , 400nm, 550nm, 700nm $(R_{th, 700} / R_{th, 550})$ 0.5 0.95 가 .

$R_{th, 550} = d \times (n_z - n_y)$ 550nm -50nm -500nm .

1 2 가 , , RG VA-LCD (dark state) B

5 VA-LCD (black state) (VA-LCD (black state) (b) a)

(Polycarbonate) ,

, $(R_{th, 400} / R_{th, 550}) = (R_{in, 400} / R_{in, 550}) = 1.15$.

6 $0^\circ \sim 70^\circ$ VA-LCD 2° (black) (a) , VA-LCD (b)

가 (flat) .

3 가 . 2

1 (monomer) 1 (monomer) 2 (monomer) , (co-polymerization) 가 2 (monomer)

VA-LCD .

[1]

1 (a) VA-LCD, $3\mu\text{m}$ VA-
 $n_{550} = 1.096$, 89° , $\varepsilon = -4.9$, $n = 0.0979$, $n_{400} /$
 VA-LCD, VA, $R_{VA,550} = 297\text{nm}$.
 (Polycarbonate) $R_{th}(550\text{nm}) =$
 $R_{in}(550\text{nm}) = 67\text{nm}$, $R_{th}(450\text{nm})/R_{th}(550\text{nm}) =$
 -270nm , $R_{in}(450\text{nm})/R_{in}(550\text{nm}) = 0.652$.
 $(550\text{nm}) = 1.15$,
 VA-LCD 8
 VA-LCD 6 (a)

[1]

1 (b) VA-LCD, $3\mu\text{m}$ VA-
 $n_{550} = 1.096$, 89° , $\varepsilon = -4.9$, $n = 0.0979$, n_{400} / n_{550}
 VA-LCD, VA, $R_{VA,550} = 297\text{nm}$.
 TAC(Triacetate cellulose) $R_{th}(550\text{nm}) =$
 -241nm , $R_{in}(550\text{nm}) = 44\text{nm}$.
 $R_{th}(450\text{nm})/R_{th}(550\text{nm}) = 1.12$, R
 $R_{in}(450\text{nm})/R_{in}(550\text{nm}) = 0.61$.
 VA-LCD 9
 VA-LCD 10

[2]

2 VA-LCD, $3\mu\text{m}$ VA-
 $n_{550} = 1.096$, 89° , $\varepsilon = -4.9$, $n = 0.0979$, $n_{400} / n_{550} = 1.$
 VA-LCD, VA, $R_{VA,550} = 297\text{nm}$.
 (Polycarbonate) $R_{th}(550\text{nm}) =$
 -119nm , $R_{in}(550\text{nm}) = 44\text{nm}$.
 $R_{th}(450\text{nm})/R_{th}(550\text{nm}) = 1.24$, R
 $R_{in}(450\text{nm})/R_{in}(550\text{nm}) = 0.585$.
 VA-LCD 11
 VA-LCD 12

가, (dark), (white) RGB (dark)

가

(57)

1.

x y (n_x, n_y) (n_z) $n_x > n_y > n_z$, 가
 가 (reversed wavelength dispersion)

가 $(R_{in} = d \times (n_x - n_y), \quad d \quad)$ 가 , 가
(normal wavelength dispersion)
 $(R_{th} = (n_z - n_y) \times d, \quad d \quad)$.

2.

1 ,

400nm, 550nm, 700nm

 $R_{in,400}, R_{in,550}, R_{in,700}$,

400nm, 550nm $R_{in,400} / R_{in,550} \quad 0.4 \quad 0.9$, 550nm, 700
nm $R_{in,700} / R_{in,550} \quad 1.1 \quad 1.8$.

3.

1 ,

 $(R_{in}) \quad 550nm \quad 30nm \quad 150nm$

4.

1 ,

400nm, 550nm, 700nm

 $R_{th,400}, R_{th,550}, R_{th,700}$,

400nm, 550nm $R_{th,400} / R_{th,550} \quad 1.05 \quad 1.4$, 550nm, 70
0nm $R_{th,700} / R_{th,550} \quad 0.5 \quad 0.95$.

5.

1 ,

 $(R_{th}) \quad 550nm \quad -50nm \quad -500nm$

6.

1 ,

(co-polymerization) 1 (monomer) 2 (monomer) .

7.

1 ,

1 (monomer) 2 (monomer)

8.

1 ,

 $(R_{in}) \quad (R_{th})$

9.

, $(\epsilon < 0)$ $(\epsilon > 0)$ 3 $8\mu m$
, , (MVA) 가 (chiral additive)
(VA-LCD) ,

(n_x, n_y) (n_z) $n_x > n_y > n_z$,

가 (Optical Axis) , 가
가 (reversed wavelength dispersion) ,
h dispersion) 가 (normal wavelengt

가

30nm 150nm

10.

9 ,

가 , 75 90 (pretilt angle)

11.

10 ,

87~90

12.

10 ,

89~90

13.

9 ,

550nm , 80nm 400nm

14.

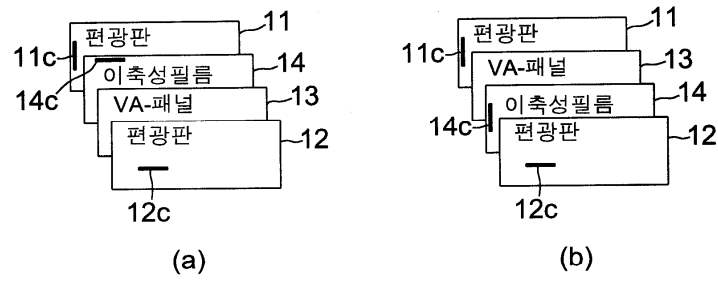
13 , 550nm , 80nm~300nm

15.

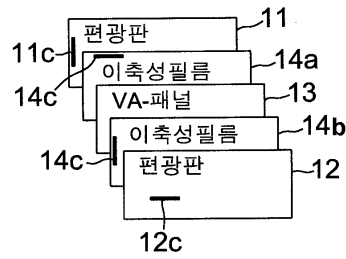
9 ,

가 (director)가 45

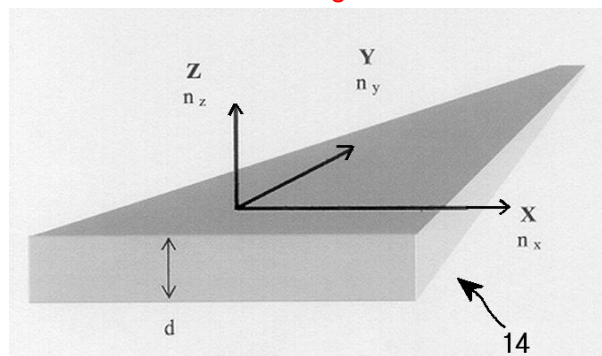
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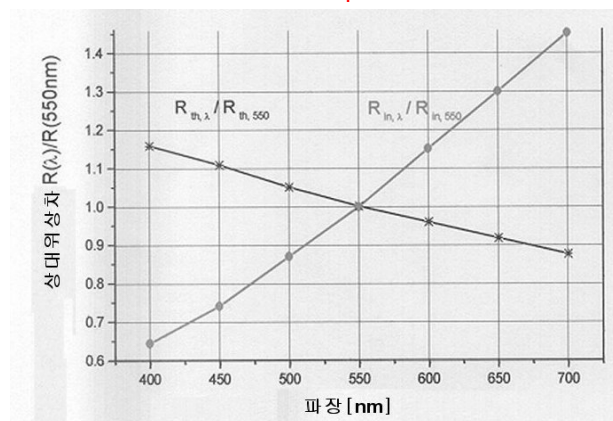
2



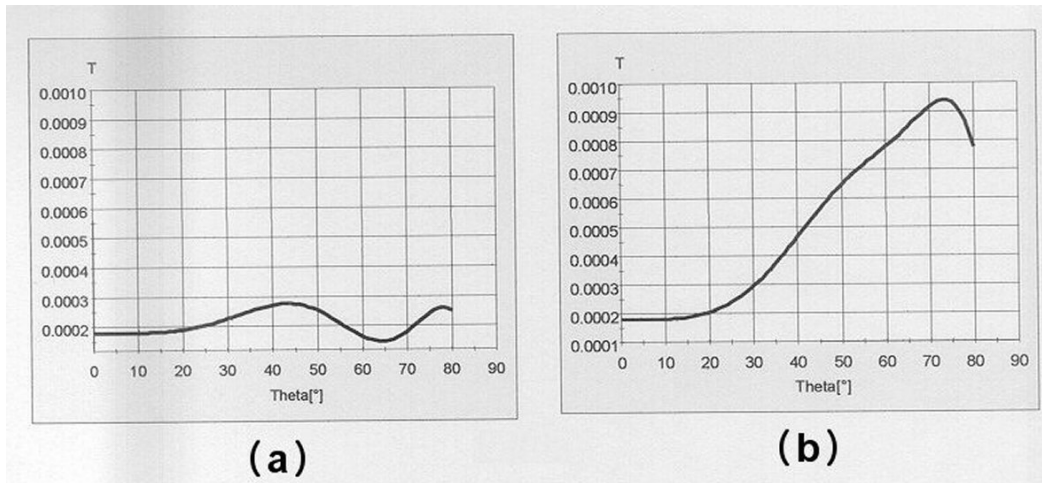
3



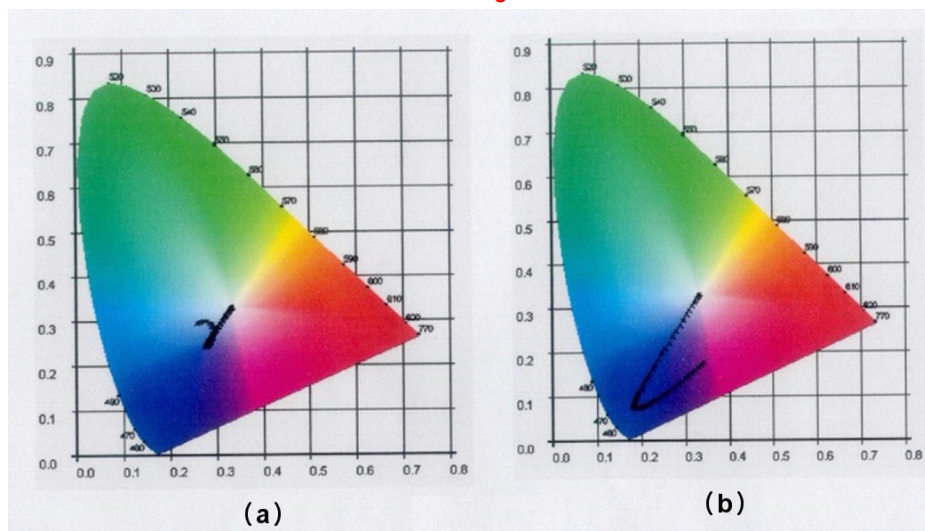
4



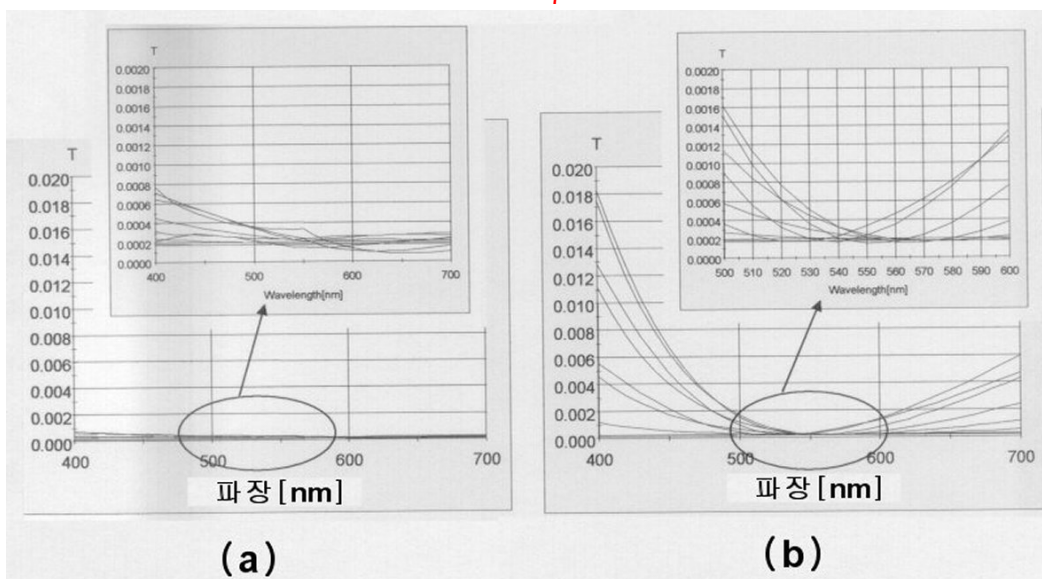
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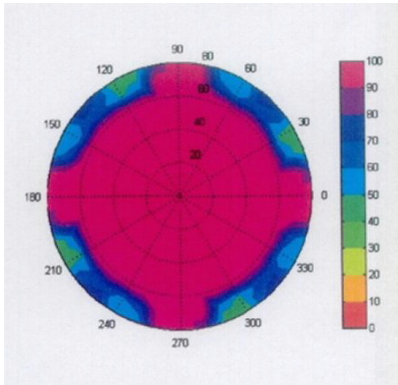
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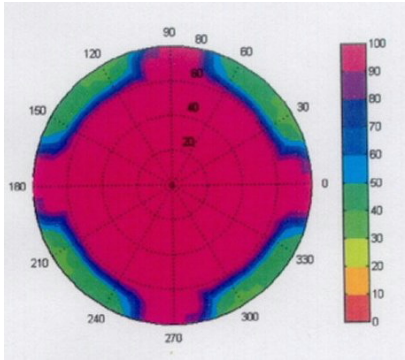
7



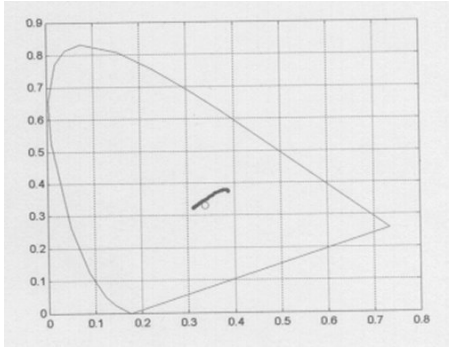
8



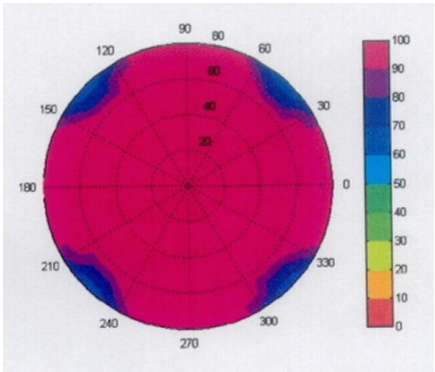
9



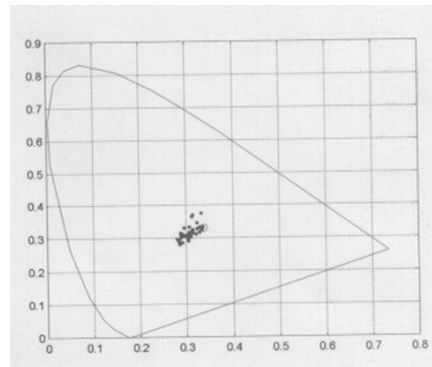
10



11



12

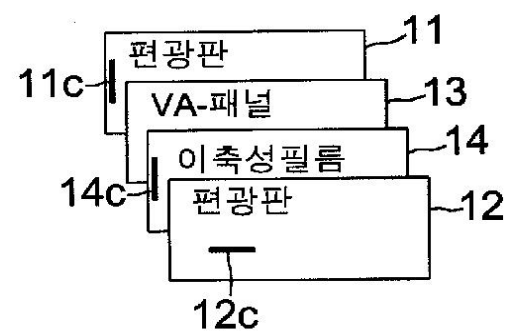


专利名称(译)	具有双轴延迟补偿膜的垂直取向液晶显示装置		
公开(公告)号	KR1020040069047A	公开(公告)日	2004-08-04
申请号	KR1020030005468	申请日	2003-01-28
[标]申请(专利权)人(译)	乐金化学股份有限公司		
申请(专利权)人(译)	LG化学有限公司		
当前申请(专利权)人(译)	LG化学有限公司		
[标]发明人	JEON BYOUNGKUN 전병건 BELYAEV SERGEY 벨리아에프세르게이 YU JEONGSU 유정수		
发明人	전병건 벨리아에프,세르게이 유정수		
IPC分类号	G02F1/13363 G02F1/139		
CPC分类号	G02F1/133634 G02F2001/133637 G02F1/1393		
代理人(译)	Joinje		
其他公开文献	KR100462327B1		
外部链接	Espacenet		

摘要(译)

技术领域本发明涉及一种使用双轴性相位差补偿膜的垂直取向液晶显示装置，膜表面上的折射率(n_x , n_y)和厚度方向上的折射率(n_z)为 $n_x > n_y > n_z$ ，其中波长在可见光范围内的平面相位差值随波长的增加而增大的逆波长色散特性具有厚度方向的相位差值。包括垂直取向面板的厚度方向的相位差值在厚度方向上的相位差值之和为30nm~150nm的范围的值，其中，绝对值减小，是正常的波长色散特性的负值。具有结构的双轴延迟补偿膜设置在垂直取向板与上下偏振片之间，以构成具有延迟补偿特性的VA-LCD单元，并且根据本发明，对比度特性在前角和倾斜角以及臂上得到改善。在黑色状态下，可获得能够最小化根据视角的颜色变化的效果。图2 索引词 LCD，垂直方向，双轴性，相位差，补偿膜

도면1



(b)