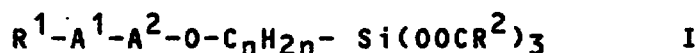




The invention relates to new trialkanoyloxysilanes of the formula I



5 wherein R^1 is H or an alkyl group of 1 - 10 C atoms wherein one or two non-adjacent CH_2 groups may also be replaced by oxygen atoms, or is F, Cl, Br or CN, R^2 is an alkyl group of 1 - 5 C atoms, A^1 and A^2 are each
10 1,4-phenylene or 1,4-cyclohexylene groups and n is 2, 3, 4, 5 or 6.

The compounds of the formula I are highly suitable for achieving homoeotropic alignment of liquid-crystalline phases on surfaces, for example glass plates
15 which may also coated, and are used in the manufacture of visual electronic display elements. Liquid-crystalline phases orientated in such a way can be affected by an external electric field in their alignment owing to their negative dielectric anisotropy. They are suitable for
20 use in displays which work on the principle of the deformation of orientated phases (Appl. Phys. Lett. 19, 391 (1971)), the principle of dynamic scattering (Proc. IEEE 56, 1162 (1968)) or the guest-host-principle (Mol. Cryst. Liq. Cryst. 63, 19 (1981)).

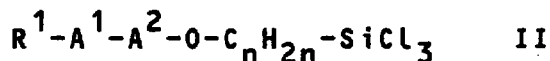
25 Hitherto the generation a homogeneous and stable homoeotropic orientation of liquid-crystalline phases was technologically fairly difficult. For instance, the liquid-crystalline phase used was doped with surface-active substances, such as lecithins, long-chain aliphatic amines, quaternary ammonium or phosphonium salts or
30 carboxylatochromium complexes (Appl. Phys. Lett. 27, 268 (1975)). It was also customary to coat glass surfaces with said substances before introducing the liquid-crystalline phase. However, the uniformity and stability of
35 the resulting homoeotropic orientation of liquid-crystalline phases leave something to be desired.

It is the object of the invention to make possible a better, in particular more uniform and more stable



homoeotropic orientation of liquid-crystalline phases on surfaces. This object is achieved by providing the compounds of the formula I.

The invention thus provides the compounds of the
5 formula I and a process for their preparation which is characterised in that a trichlorosilane of the formula II



10 wherein R^1 , A^1 , A^2 and n are as defined above, is reacted with an acid anhydride of the formula III

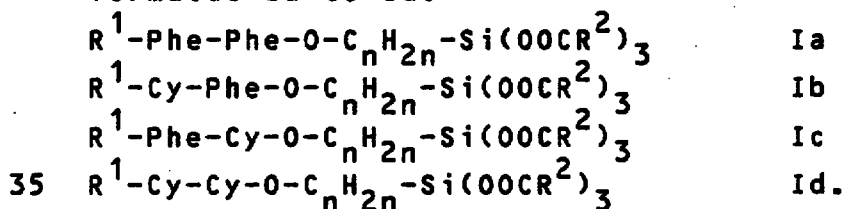


15 wherein R^2 is as defined above.

The invention also provides the use of the compounds of the formula I as components of liquid-crystalline dielectric media for visual electronic display elements and their use for generating a homoeotropic orientation of liquid-crystalline phases on surfaces. The
20 invention further provides liquid-crystalline dielectric media containing at least one compound of the formula I, as well as visual electronic display elements which contain such dielectric media and/or surfaces which have
25 been treated with a compound of the formula I.

Heretofore and hereinafter R^1 , R^2 , A^1 , A^2 and n are as defined in Claim 1, unless expressly stated otherwise.

According to the definition of the A^1 and A^2
30 groups, the compounds of the formula I include those of formulae Ia to Id:



In these formulae, Phe is 1,4-phenylene and Cy is 1,4-cyclohexylene. Compounds of the formulae Ib and Id are preferred.

23

In the compounds of the formulae mentioned heretofore and hereinafter, R^1 preferably is alkyl or is alkoxy (in particular when this radical is attached to a Phe group) or a different oxaalkyl group.

- 5 The parameter n is preferably 3. The radical C_nH_{2n} is preferably straight-chain and is accordingly in particular $-(CH_2)_3-$ or in particular $-(CH_2)_2-$, $-(CH_2)_4-$, $-(CH_2)_5-$ or $-(CH_2)_6-$.

- In the compounds of the formulae mentioned heretofore or hereinafter, the alkyl radicals can be straight-chain or branched. Preferably they are straight-chain, have 1, 2, 3, 4 or 5, in the case of R^1 even 6 or 7 C atoms, and are accordingly preferably methyl, ethyl, propyl, butyl, pentyl, or in the case of R^1 also hexyl or heptyl. R^1 can also be an alkyl group wherein one ("alkoxy" or "oxaalkyl") or 2 ("alkoxyalkoxy" or "dioxalkyl") non-adjacent CH_2 groups may be replaced by O atoms, preferably methoxy, ethoxy, propoxy, butoxy, pentoxy, hexoxy, heptoxy, 2-oxapropyl (= methoxymethyl), 2- (= ethoxymethyl) or 3-oxabutyl (= 3-methoxyethyl), 2-, 3- or 4-oxapentyl, 2-, 3-, 4- or 5-oxahexyl or 2-, 3-, 4-, 5- or 6-oxaheptyl.
- 10
- 15
- 20

- R^1 can also be, for example, octyl, nonyl, decyl, octoxy, nonoxy, decoxy, 2-, 3-, 4-, 5-, 6- or 7-oxaoctyl, 2-, 3-, 4-, 5-, 6-, 7- or 8-oxanonyl, 2-, 3-, 4-, 5-, 6-, 7-, 8- or 9-oxadecyl, 1,3-dioxabutyl (= methoxymethoxy), 1,3-, 1,4- or 2,4-dioxapentyl, 1,3-, 1,4-, 1,5-, 2,4-, 2,5- or 3,5-dioxahexyl, 1,3-, 1,4-, 1,5-, 1,6-, 2,4-, 2.5-, 2.6-, 3.5-, 3.6- or 4.6-dioxaheptyl. R^1 is preferably also F, Cl, Br or CN.
- 25
- 30

- Compounds of the formulae I as well as Ia to Id having branched R^1 and/or R^2 radicals can occasionally be of importance - because of superior solubility in the customary liquid-crystalline base materials - as can be dopants if they are optically active. Branched groups of this type generally contain no more than one branch in the chain. Preferred branched R^1 and R^2 radicals are isopropyl, 2-butyl (= 1-methylpropyl), isobutyl
- 35

(= 2-methylpropyl), 2-methylbutyl and isopentyl (= 3-methyl-butyl); R^1 can also be 2-methylpentyl, 3-methylpentyl, 2-ethylhexyl, 2-propylpentyl, isopropoxy, 2-methylpropoxy, 2-methylbutoxy, 3-methylbutoxy, 2-methylpentoxy, 3-methyl-pentoxy, 1-methylhexoxy, 1-methylheptoxy, 2-ethylhexoxy, 2-oxa-3-methylbutyl or 3-oxa-4-methylpentyl.

In particular, the radical R^2 is preferably a methyl group.

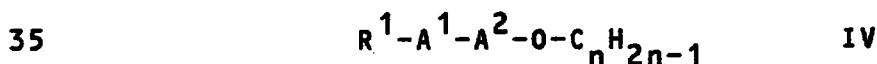
10 If the A^1 and/or A^2 groups are cyclohexylene groups which are disubstituted in the 1- and 4-positions, the substituents can be in the cis- or trans-position. Compounds with trans-configuration are preferred.

15 Compounds of the formula I having optically active C atoms encompass not only the racemates but also the corresponding optically active enantiomers as well as their mixtures.

The compounds of the formula I can be prepared by methods known per se, as described in the literature 20 (for example in standard works such as Houben-Weyl, Methoden der Organischen Chemie [Methods of Organic Chemistry], published by Georg Thieme, Stuttgart), under reaction conditions known and suitable for said reactions. These reactions can also be carried out using variants 25 known per se but not specifically mentioned here.

The starting materials, in particular those of the formula II, can, if desired, also be formed in situ in the sense that they are not isolated from the reaction mixture but are immediately further reacted to the com- 30 pounds of the formula I.

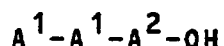
The trichlorosilanes of the formula II are new. They can be prepared, for example, by reacting an unsaturated ether of the formula IV



with trichlorosilane.

The ethers of the formula IV can in turn be

prepared by alkenylating hydroxy compounds of the formula V



V

5 with an appropriate alkenyl halide of the formula $C_nH_{2n-1}Cl$ or $C_nH_{2n-1}Br$.

The addition of trichlorosilane onto the unsaturated ethers of the formula IV is preferably accomplished at temperatures between about 0 and about 100°, preferably at the boil, in the presence of an inert solvent, for example a halogenated hydrocarbon, such as dichloromethane. Trichlorosilane is advantageously used in excess. And it is an advantage to add a noble metal catalyst, for example a solution of H_2PtCl_6 in isopropanol. The resulting product of the formula II is preferably not purified but is reacted in the crude state with the acid anhydride of the formula III, preferably no additional solvent being added but an excess of anhydride being used as the solvent. The reaction temperatures are advantageously between 50 and about 200°, preferably between 120 and 160°.

The compounds of the formula I can be immediately used for coating the surfaces to be treated. Suitable surfaces for coating are in particular oxidic surfaces, for example those of metal oxides, semimetal oxides or non-metal oxides, but especially glass surfaces.

The coating is preferably applied by wetting the previously cleaned surfaces with an approximately 0.1 to 1% solution of a compound of the formula I in an inert solvent, for example a halogenated hydrocarbon such as dichloromethane, evaporating the solvent, exposing the surface to a humid atmosphere - in order to hydrolyse the ester bonds - and then briefly heating the surface, the result being a thin film of high molecular weight hydrolysis products.

However, one or more compounds of the formula I can be used as dopants added to liquid-crystalline dielectric media in amounts of about 0.01 to 1%, preferably

about 0.05 to 0.5%.

The dielectric media according to the invention consist of 2 to 15, preferably 3 to 12, components among which is at least one compound of the formula I. The other components are preferably selected from among the nematic or nematogenic substances, in particular the known substances, of the classes of azoxybenzenes, benzylidene-anilines, biphenyls, terphenyls, phenyl or cyclohexyl benzoates, phenyl or cyclohexyl cyclohexanecarboxylates, phenylcyclohexanes, cyclohexylbiphenyls, cyclohexylcyclohexanes, cyclohexylnaphthalenes, 1,4-biscyclohexylbenzenes, 4,4'-biscyclohexylbiphenyls, phenylpyrimidines, cyclohexylpyrimidines, phenyldioxanes, cyclohexyldioxanes, optionally halogenated stilbenes, benzyl phenyl ethers, tolanes and substituted cinnamic acids.

The most important potential compounds for use as components of such liquid-crystalline dielectric media can be characterised by the formula VI

20

$R'-L-G-E-R''$

VI

wherein L and E are each a carbocyclic or heterocyclic ring system selected from the group comprising 1,4-disubstituted benzene and cyclohexane rings, 4,4'-disubstituted biphenyl, phenylcyclohexane and cyclohexylcyclohexane systems, 2,5-disubstituted pyrimidine and 1,3-dioxane rings, 2,6-disubstituted naphthalene, dihydronaphthalene, tetrahydronaphthalene, quinazoline and tetrahydroquinazoline,

30

G	-CH=CH-	-N(O)=N-
	-CH=CY-	-CH=N(O)-
	-C=C-	-CH ₂ -CH ₂ -
	-CO-O-	-CH ₂ -O-
	-CO-S-	-CH ₂ -S-
35	-CH=N-	-COO-Phe-COO-

or C-C single bond, Y is halogen, preferably chlorine, or -CN, and R' and R'' are each alkyl, alkoxy, alkanoyloxy or alkoxycarbonyloxy of up to 18, preferably up to 8,

carbon atoms, or one of these radicals is also CN, NC, NO₂, CF₃, F, Cl or Br.

In most of these compounds, R' and R" are different from each other, one of these radicals usually being an alkyl or alkoxy group. However, different variants of the proposed substituents are also customary. Many such substances or mixtures thereof are commercially available.

The dielectric media according to the invention are prepared in conventional manner per se. The components are generally dissolved in one another, preferably at elevated temperatures.

By means of suitable additives the liquid-crystalline dielectric media according to the invention can be modified in such a way that they can be used in any type of liquid crystal display elements disclosed to date.

The person skilled in the art is familiar with such additives, which are described in detail in the literature. For example, conducting salts, preferably ethyldimethyldodecylammonium 4-hexyloxybenzoate, tetrabutylammonium tetraphenylboronate or complex salts of crown ethers (cf. for example I. Haller et al., Mol. Cryst. Liq. Cryst. Volume 24, pages 249 - 258 (1973)) can be added to improve the conductivity, dichroic dyestuffs can be added to prepare coloured guest-host systems, or substances can be added to change the dielectric anisotropy, the viscosity and/or the orientation of the nematic phases. Such substances are described, for example, in German Offenlegungsschriften 2,209,127, 2,240,864, 2,321,632, 2,338,281, 2,450,088, 2,637,430, 2,853,728 and 2,902,177.

The following Examples are intended to illustrate the invention without limiting it. m.p. = melting point, and c.p. = clear point. Heretofore and hereinafter percentages are per cent by weight; all temperatures are given in degrees centigrade.

Preparation example

26.8 g of HSiCl₃ and then 0.5 ml of an 0.05 M solution of H₂PtCl₆ in isopropanol are added to a

solution of 32.4 g of 3-(p-trans-4-propylcyclohexylphenoxy)-propene (m.p. 25-28°; obtainable by reacting Na p-trans-4-propylcyclohexylphenolate with allyl bromide) in 60 ml of CH₂Cl₂. After two days at the boil the excess HSiCl₃ is distilled off. The resulting crude 1-trichlorosilyl-3-(p-trans-4-propyl-cyclohexylphenoxy)-propane is boiled for 5 hours with 76.8 g of acetic anhydride. This distilling-off of the excess acetic anhydride gives 1-triacetoxysilyl-3-(p-trans-4-propylcyclohexylphenoxy)-propane; m.p. 36°, c.p. 65°.

The following compounds are obtained analogously from the corresponding anhydrides:

- 1-Tripropionyloxysilyl-3-(p-trans-4-propylcyclohexylphenoxy)-propane
- 15 1-Tributyryloxysilyl-3-(p-trans-4-propylcyclohexylphenoxy)-propane
- 1-Triisobutyryloxysilyl-3-(p-trans-4-propylcyclohexylphenoxy)-propane
- 1-Trivaleryloxysilyl-3-(p-trans-4-propylcyclohexylphenoxy)-propane
- 20 1-Tricapronyloxysilyl-3-(p-trans-4-propylcyclohexylphenoxy)-propane
- 1-Triacetoxysilyl-3-p-cyclohexylphenoxy-propane
- 1-Triacetoxysilyl-3-(p-trans-4-methylcyclohexylphenoxy)-propane
- 25 1-Triacetoxysilyl-3-(p-trans-4-ethylcyclohexylphenoxy)-propane
- 1-Triacetoxysilyl-3-(p-trans-4-butylcyclohexylphenoxy)-propane
- 30 1-Triacetoxysilyl-3-(p-trans-4-isobutylcyclohexylphenoxy)-propane
- 1-Triacetoxysilyl-3-(p-trans-4-sec.-butylcyclohexylphenoxy)-propane
- 1-Triacetoxysilyl-3-(p-trans-4-pentylcyclohexylphenoxy)-propane
- 35 1-Triacetoxysilyl-3-(p-trans-4-hexylcyclohexylphenoxy)-propane
- 1-Triacetoxysilyl-3-(p-trans-4-heptylcyclohexylphenoxy)-propane

- propane
1-Triacetoxysilyl-3-(p-trans-4-octylcyclohexylphenoxy)-
propane
1-Triacetoxysilyl-3-(p-trans-4-nonylcyclohexylphenoxy)-
5 propane
1-Triacetoxysilyl-3-(p-trans-4-decylcyclohexylphenoxy)-
propane
1-Triacetoxysilyl-3-p-biphenyloxy-propane
1-Triacetoxysilyl-3-(4'-methyl-biphenyl-4-oxy)-propane
10 1-Triacetoxysilyl-3-(4'-ethyl-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-propyl-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-butyl-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-pentyl-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-hexyl-biphenyl-4-oxy)-propane
15 1-Triacetoxysilyl-3-(4'-heptyl-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-octyl-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-nonyl-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-decyl-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-methoxy-biphenyl-4-oxy)-propane
20 1-Triacetoxysilyl-3-(4'-ethoxy-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-propoxy-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-butoxy-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-pentoxy-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-hexoxy-biphenyl-4-oxy)-propane
25 1-Triacetoxysilyl-3-(4'-heptoxy-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-methoxymethyl-biphenyl-4-oxy)-
propane
1-Triacetoxysilyl-3-(4'-methoxymethoxy-biphenyl-4-oxy)-
propane
30 1-Triacetoxysilyl-3-(4'-fluoro-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-chloro-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-bromo-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(4'-cyano-biphenyl-4-oxy)-propane
1-Triacetoxysilyl-3-(trans-4-phenylcyclohexoxy)-propane
35 1-Triacetoxysilyl-3-(trans-4-p-tolylcyclohexoxy)-propane
1-Triacetoxysilyl-3-(trans-4-p-ethylphenylcyclohexoxy)-
propane
1-Triacetoxysilyl-3-(trans-4-p-propylphenylcyclohexoxy)-



- propane
1-Triacetoxysilyl-3-(trans-4-p-butylphenylcyclohexoxy)-
propane
1-Triacetoxysilyl-3-(trans-4-p-pentylphenylcyclohexoxy)-
5 propane
1-Triacetoxysilyl-3-(trans-4-p-hexylphenylcyclohexoxy)-
propane
1-Triacetoxysilyl-3-(trans-4-p-heptylphenylcyclohexoxy)-
propane
10 1-Triacetoxysilyl-3-(trans-4-p-methoxyphenylcyclohexoxy)-
propane
1-Triacetoxysilyl-3-(trans-4-p-ethoxyphenylcyclohexoxy)-
propane
1-Triacetoxysilyl-3-(trans-4-p-propoxyphenylcyclohexoxy)-
15 propane
1-Triacetoxysilyl-3-(trans-4-p-butoxyphenylcyclohexoxy)-
propane
1-Triacetoxysilyl-3-(trans-4-p-pentoxyphenylcyclohexoxy)-
propane
20 1-Triacetoxysilyl-3-(trans-4-p-fluorophenylcyclohexoxy)-
propane
1-Triacetoxysilyl-3-(trans-4-p-chlorophenylcyclohexoxy)-
propane
1-Triacetoxysilyl-3-(trans-4-p-bromophenylcyclohexoxy)-
25 propane
1-Triacetoxysilyl-3-(trans-4-p-cyanophenylcyclohexoxy)-
propane
1-Triacetoxysilyl-3-(trans-4-(trans-4-propylcyclohexyl)-
cyclohexoxy)-propane
30 1-Triacetoxysilyl-3-(trans-4-(trans-4-utylcyclohexyl)-
cyclohexoxy)-propane
1-Triacetoxysilyl-3-(trans-4-(trans-4-pentylcyclohexyl)-
cyclohexoxy)-propane
1-Triacetoxysilyl-3-(trans-4-(trans-4-hexylcyclohexyl)-
35 cyclohexoxy)-propane
1-Triacetoxysilyl-3-(trans-4-(trans-4-heptylcyclohexyl)-
cyclohexoxy)-propane
1-Triacetoxysilyl-2-(p-trans-4-propylcyclohexylphenoxy)-

ethane

1-Triacetoxysilyl-4-(p-trans-4-propylcyclohexylphenoxy)-
butane

1-Triacetoxysilyl-5-(p-trans-4-propylcyclohexylphenoxy)-
pentane

1-Triacetoxysilyl-6-(p-trans-4-propylcyclohexylphenoxy)-
hexane

1-Triacetoxysilyl-2-methyl-3-(p-trans-4-propylcyclohexyl)-
phenoxy)-propane.

Formulation example (dielectric medium):

A mixture of

54 % of p-trans-4-propylcyclohexylphenyl butyrate,

26 % of trans-4-propylcyclohexyl p-trans-4-butylcyclo-
hexylbenzoate,

19.9% of trans-4-propylcyclohexyl p-trans-4-propylcyclo-
hexylbenzoate,

0.1% of 1-triacetoxysilyl-3-(p-trans-4-propylcyclohexyl-
phenoxy)-propane

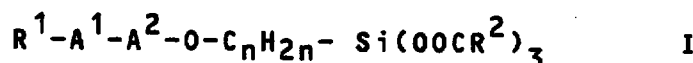
has a c.p. of 80°.

Use example: Coating of glass surfaces

The pieces of glass, which have been carefully cleaned in 1,1,2-trichloroethane vapour, are wetted with an 0.5% solution of 1-triacetoxysilyl-3-(p-trans-4-propylcyclohexylphenoxy)-propane in CH_2Cl_2 and, when the solvent has evaporated, are transferred into a saturated humid atmosphere at room temperature. After 10 minutes the glass surfaces are heated at 120° for 5 minutes and are then allowed to cool down.

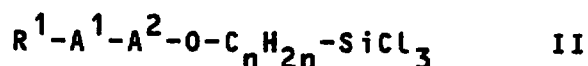
(32)

1. Trialkanoyloxysilanes of the formula I



wherein R^1 is H or an alkyl group of 1 - 10 C atoms wherein one or two non-adjacent CH_2 groups may also be replaced by oxygen atoms, or is F, Cl, Br or CN, R^2 is an alkyl group of 1 - 5 C atoms, A^1 and A^2 are each 1,4-phenylene or 1,4-cyclohexylene groups and n is 2, 3, 4, 5 or 6.

2. 1-Triacetoxysilyl-3-(p-trans-4-propylcyclohexyl-phenoxy)-propane.
3. Process for preparing trialkanoyloxysilanes of the formula I according to Claim 1, characterised in that a trichlorosilane of the formula II



wherein R^1 , A^1 , A^2 and n are as defined above, is reacted with an acid anhydride of the formula III



wherein R^2 is as defined above.

4. Use of compounds of the formula I according to Claim 1 as components of liquid-crystalline dielectric media for visual electronic display elements.
5. Liquid-crystalline dielectric medium for visual electronic display elements having at least two liquid-crystalline components, characterised in that at least one component is a compound of the formula I according to Claim 1.
6. Visual electronic display element, characterised in that it contains a dielectric medium according to Claim 5.
7. Use of compounds of the formula I according to

Claim 1 for generating a homoeotropic orientation of liquid-crystalline phases on surfaces.

8. Visual electronic display element, characterised in that it contains surfaces which have been treated with a compound of the formula I according to Claim 1.

As printed.

Claims

1. Trialkanoyloxysilanes of the formula I

$R^1-A^1-A^2-O-C_nH_{2n}-Si(OOCR^2)_3$
wherein R^1 is H or an alkyl group of 1-10 C atoms wherein one or two non-adjacent CH_2 groups may also be replaced by oxygen atoms, or is F, Cl, Br or CN, R^2 is an alkyl group of 1-5 C atoms, A^1 and A^2 are each 1,4-phenylene or 1,4-cyclohexylene groups and n is 2, 3, 4, 5 or 6.

2. 1-Triacetoxysilyl-3-(p-trans-4-propylcyclohexyl-phenoxy)-propane.

3. Process for preparing trialkanoyloxysilanes of the formula I according to Claim 1, characterised in that a trichlorosilane of the formula II



wherein R^1 , A^1 , A^2 and n are as defined above, is reacted with an acid anhydride of the formula III



III

wherein R^2 is as defined above.

4. Use of compounds of the formula I according to Claim 1 as components of liquid-crystalline dielectric media for visual electronic display elements.

5. Liquid-crystalline dielectric medium for visual electronic display elements having at least two liquid-crystalline components, characterised in that at least one component is a compound of the formula I according to Claim 1.

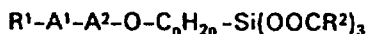
6. Visual electronic display element, characterised in that it contains a dielectric medium according to Claim 5.

7. Use of compounds of the formula I according to Claim 1 for generating a homoeotropic orientation of liquid-crystalline phases on surfaces.

8. Visual electronic display element, characterised in that it contains surfaces which have been treated with a compound of the formula I according to Claim 1.

Revendications

1. Trialkanoyloxysilanes de formule I



dans laquelle

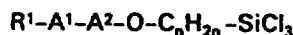
R^1 est H, un groupe avec 1-10 atomes de carbone, dans lequel un ou deux groupes CH_2 non voisins peuvent être remplacés par des atomes O, par F, Cl, Br ou CN,

R^2 est un groupe alkyle avec de 1 à 5 atomes de carbone,

A^1 et A^2 représentent chacun des groupes 1,4-phénylène ou 1,4-cyclohexylène et n est 2, 3, 4, 5 ou 6.

2. 1-triacétoxysilyl-3-(p-trans-4-propyl-cyclohexylphénoxy)-propane.

3. Procédé de préparation de trialkanoyloxysilanes de formule I selon la revendication 1, caractérisé en ce qu'on fait réagir un trichlorosilane de formule II



II

dans laquelle

R^1 , A^1 , A^2 et n ont les significations données, avec un anhydride d'acide de formule III



III

dans laquelle

R^2 a la signification donnée.

4. Utilisation des composés de formule I selon la revendication 1 comme composants de diélectriques à cristaux liquides pour des éléments d'affichage électrooptique.

5. Diélectrique à cristaux liquides pour des éléments d'affichage électrooptiques avec au moins deux composants à cristaux liquides caractérisé en ce qu'au moins un composant est un composé de formule I selon la revendication 1.

6. Élément d'affichage électrooptique, caractérisé en ce qu'il contient un diélectrique selon la revendication 5.

7. Utilisation de composés de formule I selon la revendication 1 à la fabrication d'une orientation homéotrope de phases à cristaux liquides déposées sur des surfaces.

8. Élément d'affichage électrooptique caractérisé en ce qu'il contient des surfaces qui ont été traitées avec un composé de formule I selon la revendication 1.

