outgassing, and have a problem that the driving performance is lowered due to outgassing components generated from the thermally cured insulating layer. In view of the above-mentioned problem, it is an object of the embodiments disclosed herein to provide a photosensitive resin composition for thin film transistors with which it is possible to form an insulating layer for thin film transistors that is extremely little in outgassing from a cured film and that is excellent in driving performance.

SOLUTIONS TO THE PROBLEMS

[0008]

There is provided a photosensitive resin composition for thin film transistors, containing (A) an amide group- and/or imide group-containing alkali-soluble resin, (B) a photosensitive compound, and (C) an organic solvent, wherein the organic solvent (C) contains 1% by mass or less of a nitrogen atom-containing organic solvent based on the organic solvent in total.

[0008a]

In an aspect, there is provided a photosensitive resin composition for thin film transistors, comprising (A) an amide group- and/or imide group-containing alkali-soluble resin, (B) a photosensitive compound, and (C) an organic solvent, wherein the organic solvent (C) contains 0.01% by mass or more and 1% by mass or less of the nitrogen atom-containing organic solvent based on the organic solvent in total.

[0008b]

In another aspect, there is provided a cured film which is a cured product of the photosensitive resin composition for thin film transistors as defined above.

[0008c]

In another aspect, there is provided a thin film transistor comprising the cured film as defined above in at least one of a gate insulating layer and an interlayer insulating layer.

[0008d]

In another aspect, there is provided a thin film transistor of a top gate type, comprising the cured film as defined above in an interlayer insulating layer, and comprising at least one of silicon nitride, silicon oxide, and silicon oxynitride in a gate insulating layer.

[0008e]

In another aspect, there is provided a liquid crystal display device or an organic electroluminescent display device comprising the thin film transistor as defined above.

[0008f]

In another aspect, there is provided a method for producing a cured film, comprising the steps of: applying the photosensitive resin composition for thin film transistors as defined above to a substrate to form a photosensitive resin film; drying the photosensitive resin film; exposing the photosensitive resin film; developing the exposed photosensitive resin film; and thermally curing the photosensitive resin film.

[0008g]

In another aspect, there is provided a method for manufacturing a thin film transistor using a cured film obtained by the production method as define above.

[0008h]

In another aspect, there is provided a method for manufacturing a liquid crystal display device or an organic electroluminescent display device using a thin film transistor obtained by the manufacturing method as defined above.

EFFECTS

[0009]

The present disclosure can provide a photosensitive resin composition for thin film transistors with which it is possible to form an insulating layer for thin film transistors that is

CLAIMS

1. A photosensitive resin composition for thin film transistors, comprising (A) an amide group- and/or imide group-containing alkali-soluble resin, (B) a photosensitive compound, and (C) an organic solvent, wherein the organic solvent (C) contains 0.01% by mass or more and 1% by mass or less of the nitrogen atom-containing organic solvent based on the organic solvent in total.

2. The photosensitive resin composition for thin film transistors according to claim 1, wherein the organic solvent (C) contains 80% by mass or more of an organic solvent satisfying the following (1) and (2) based on the organic solvent in total:

(1) a solubility parameter of 8.0 or more and 11.0 or less [unit: $(cal/cm^3)^{1/2}$]; and

(2) an organic compound composed of a carbon atom, a hydrogen atom, and an oxygen atom.

3. The photosensitive resin composition for thin film transistors according to claim 1 or 2, wherein the organic solvent (C) contains 0.01% by mass or more and 0.5% by mass or less of the nitrogen atom-containing organic solvent based on the organic solvent in total.

4. The photosensitive resin composition for thin film transistors according to claim 2 or 3, wherein the organic solvent (C) satisfying (1) and (2) further satisfies the following (3):

(3) a boiling point at atmospheric pressure of 100°C or higher and 180°C or lower.

5. The photosensitive resin composition for thin film transistors according to any one of claims 1 to 4, wherein the amide group- and/or imide group-containing alkali-soluble resin (A) is at least one alkali-soluble resin selected from a polyimide, a polyimide precursor, and a polybenzoxazole precursor, or a copolymer thereof.

6. The photosensitive resin composition for thin film transistors according to any one of claims 1 to 5, wherein the photosensitive compound (B) is a quinonediazide compound.

7. The photosensitive resin composition for thin film

transistors according to claim 6, wherein the quinonediazide compound contains a 4-naphthoquinone diazide sulfonyl ester compound.

8. The photosensitive resin composition for thin film transistors according to any one of claims 1 to 7, comprising 0.1 parts by mass or more and 20 parts by mass or less of the photosensitive compound (B) based on 100 parts by mass of the amide group- and/or imide group-containing alkali-soluble resin (A) selected from a polyimide, a polyimide precursor, and a polybenzoxazole precursor.

9. The photosensitive resin composition for thin film transistors according to any one of claims 1 to 8, further comprising (D) an adhesion improver.

10. The photosensitive resin composition for thin film transistors according to claim 9, wherein the adhesion improver (D) contains a nitrogen atom-containing silane coupling agent.

11. A cured film which is a cured product of the photosensitive resin composition for thin film transistors according to any one of claims 1 to 10.

12. A thin film transistor comprising the cured film according to claim 11 in at least one of a gate insulating layer and an interlayer insulating layer.

13. A thin film transistor of a top gate type, comprising the cured film according to claim 11 in an interlayer insulating layer, and comprising at least one of silicon nitride, silicon oxide, and silicon oxynitride in a gate insulating layer.

14. A liquid crystal display device or an organic electroluminescent display device comprising the thin film transistor according to claim 12 or 13.

15. A method for producing a cured film, comprising the steps of: applying the photosensitive resin composition for thin film transistors according to any one of claims 1 to 10 to a substrate to form a photosensitive resin film; drying the photosensitive resin film; exposing the photosensitive resin film; developing the exposed photosensitive resin film; and thermally curing the photosensitive resin film.

16. The production method according to claim 15, wherein the step of thermally curing the photosensitive resin film is performed at 300°C or higher and 450°C or lower.

17. A method for manufacturing a thin film transistor using a cured film obtained by the production method according to claim 15 or 16.

18. A method for manufacturing a liquid crystal display device or an organic electroluminescent display device using a thin film transistor obtained by the manufacturing method according to claim 17.