WHAT IS CLAIMED IS:

1. A display device, comprising a display area and a non-display area, wherein the display device comprises:

a substrate;

an element layer disposed on the substrate;

an electrode pattern layer disposed on the element layer, wherein the electrode pattern layer comprises a plurality of electrodes;

a photoresist pattern layer disposed on the electrode pattern layer and comprising:

a first photoresist pattern disposed corresponding to the display area and corresponding to the plurality of the electrodes, and

a second photoresist pattern disposed corresponding to the non-display area and between the plurality of the electrodes; and

at least one light-emitting element disposed on the photoresist pattern layer and electrically connected to the plurality of the electrodes of the electrode pattern layer, wherein a height of the first photoresist pattern is equal to a height of the second photoresist pattern, and the light-emitting element is disposed on a plane of the photoresist pattern layer formed by the first photoresist pattern and the second photoresist pattern, so that the light-emitting element is disposed on the first photoresist pattern and the second photoresist pattern.

2. The display device according to claim 1, wherein

the first photoresist pattern has a higher transmittance and a higher reflectivity, while the second photoresist pattern has a lower transmittance and a lower reflectivity.

3. The display device according to claim 1, wherein

the photoresist pattern layer comprises an opening to expose the plurality of the electrodes of the electrode pattern layer, and

the light-emitting element is electrically connected to the plurality of the electrodes of the

electrode pattern layer through the opening.

4. The display device according to claim 1, wherein

transmittance of a visible light region of the first photoresist pattern ranges from 25% to 100%.

5. The display device according to claim 1, wherein

reflectivity of a visible light region of the first photoresist pattern is less than or equal to 20%.

6. The display device according to claim 1, wherein

transmittance of a visible light region of the second photoresist pattern ranges from 0% to 40%.

7. The display device according to claim 1, wherein

reflectivity of a visible light region of the second photoresist pattern is less than or equal to 15%.

8. The display device according to claim 1, wherein

the light-emitting element comprises a micro light-emitting diode (Micro LED) or a sub-millimeter light-emitting diode (Mini LED).

9. The display device according to claim 1, wherein

a material of the photoresist pattern layer is selected from ionomer resin, thermally sensitive resin, thermosetting resin, hydrocarbon resin, acrylonitrile butadiene styrene resin, acrylic resin, fluorocarbon resin, acetal resin, epoxide resin, ion exchange resin, ionic polymer, amino resin, furfural resin, furfural phenol resin, phenolic resin, phenol ether resin, urea-formaldehyde resin, urea resin, carbamide resin, polyvinyl chloride, polyethylene terephthlate, polyamide, ethylene-vinyl alcohol copolymer, ethylene-propylene copolymer, ethylene-tetrafluoroethylene copolymer, melamine-phenol-formaldehyde resin, and combinations thereof.

10. A manufacturing method of a display device, wherein the display device comprises a display area and a non-display area, and the manufacturing method of the display device comprises:

disposing a substrate;

forming an element layer on the substrate;

forming an electrode pattern layer on the element layer, wherein the electrode pattern layer comprises a plurality of electrodes;

forming a photoresist layer on the electrode pattern layer;

providing first energy to the photoresist layer corresponding to the display area to form a first photoresist pattern, wherein the first photoresist pattern is formed corresponding to the plurality of the electrodes;

providing second energy to the photoresist layer corresponding to the non-display area to form a second photoresist pattern, wherein the second photoresist pattern is formed between the plurality of the electrodes, and the first photoresist pattern and the second photoresist pattern form a photoresist pattern layer; and

disposing a light-emitting element on the photoresist pattern layer, wherein the light-emitting element is electrically connected to the plurality of the electrodes of the electrode pattern layer, a height of the first photoresist pattern is equal to a height of the second photoresist pattern, and the light-emitting element is disposed on a plane of the photoresist pattern layer formed by the first photoresist pattern and the second photoresist pattern, so that the light-emitting element is disposed on the first photoresist pattern and the second photoresist pattern.

11. The manufacturing method of the display device according to claim 10, wherein

a first laser with the first energy is disposed, the photoresist layer is scanned to form the first photoresist pattern, and an energy range of the first laser ranges from 20 J/g to 400 J/g; and

a second laser with the second energy is disposed, the photoresist layer is scanned to form the second photoresist pattern, and an energy range of the second laser ranges from 300 J/g to 100J/g.

12. The manufacturing method of the display device according to claim 10, wherein

a first imprinting device with the first energy is disposed, the photoresist layer is imprinted to form the first photoresist pattern, and a temperature of the first imprinting device ranges from 120°C to 200°; and

a second imprinting device with the second energy is disposed, the photoresist layer is imprinted to form the second photoresist pattern, and a temperature of the second imprinting device ranges from 150°C to 300°.

13. The manufacturing method of the display device according to claim 12, further comprising:

performing a baking process on the photoresist layer, wherein a temperature of the baking process ranges from 80°C to 110°C; and

imprinting the photoresist layer through the first imprinting device and imprinting the photoresist layer through the second imprinting device after the baking process.

14. The manufacturing method of the display device according to claim 10, wherein

the first photoresist pattern surrounds the side surfaces of the plurality of the electrodes.

15. The manufacturing method of the display device according to claim 10, further comprising:

providing a developer to remove part of the photoresist layer and to form an opening to expose the plurality of the electrodes of the electrode pattern layer,

wherein the light-emitting element is electrically connected to the plurality of the electrodes of the electrode pattern layer through the opening.

16. The manufacturing method of the display device according to claim 10, wherein

transmittance of a visible light region of the first photoresist pattern ranges from 25% to 100%.

17. The manufacturing method of the display device according to claim 10, wherein reflectivity of a visible light region of the first photoresist pattern is less than or equal to 20%.

18. The manufacturing method of the display device according to claim 10, wherein transmittance of a visible light region of the second photoresist pattern ranges from 0% to 40%.

19. The manufacturing method of the display device according to claim 10, wherein reflectivity of a visible light region of the second photoresist pattern is less than or equal to 15%.

20. The manufacturing method of the display device according to claim 10, wherein a material of the photoresist pattern layer is selected from ionomer resin, thermally sensitive resin, thermosetting resin, hydrocarbon resin, acrylonitrile butadiene styrene resin, acrylic resin, fluorocarbon resin, acetal resin, epoxide resin, ion exchange resin, ionic polymer, amino resin, furfural resin, furfural phenol resin, phenolic resin, phenol ether resin, urea-formaldehyde resin, urea resin, carbamide resin, polyvinyl chloride, polyethylene terephthlate, polyamide, ethylene-vinyl alcohol copolymer, ethylene-propylene copolymer, ethylene-tetrafluoroethylene copolymer, melamine-phenol-formaldehyde resin, and combinations thereof.