Claims

1. Method for producing a transparent electrode ~~(110)~~ on a substrate ~~(101)~~, the method comprising:

- provision of the substrate ~~(101)~~,

- deposition of a first transparent electrically conductive layer ~~(111)~~ on the substrate ~~(101)~~,

- deposition of a metal oxide layer ~~(115)~~ on a surface ~~(114)~~ of the electrically conductive layer ~~(111)~~ facing away from the substrate ~~(101)~~,

- subdivision of the metal oxide layer ~~(115)~~ into a plurality of metal particles ~~(112)~~ by a thermal decomposition,

- deposition of a second transparent electrically conductive layer ~~(113)~~ on the metal particles ~~(112)~~.

2. Method for producing a photovoltaic cell ~~(100)~~, the method comprising:

- provision of a substrate ~~(101)~~,

- deposition of a first transparent electrically conductive layer ~~(111)~~ on the substrate ~~(101)~~,

- deposition of a metal oxide layer ~~(115)~~ on a surface ~~(114)~~ of the electrically conductive layer ~~(111)~~ facing away from the substrate ~~(101)~~,

- subdivision of the metal oxide layer ~~(115)~~ into a plurality of metal particles ~~(112)~~ by a thermal decomposition,

- deposition of a second transparent electrically conductive layer ~~(113)~~ on the metal particles ~~(112)~~,

- application of layers ~~(120, 130, 140)~~ to the second transparent electrically conductive layer ~~(113)~~ in order to finish the photovoltaic cell.

3. Method for producing a photovoltaic cell ~~(100)~~, the method comprising:

- provision of a substrate ~~(101)~~,

- deposition of a transparent electrically conductive electrode ~~(110)~~ on the substrate ~~(101)~~,

- application of a first photoactive layer stack ~~(120)~~ to the transparent electrically conductive electrode ~~(110)~~,

- application of a first intermediate layer ~~(151)~~ to the first photoactive layer stack ~~(120)~~,

- deposition of a metal oxide layer ~~(115)~~ on a surface of the first intermediate layer ~~(151)~~ facing away from the substrate ~~(101)~~,

- subdivision of the metal oxide layer ~~(115)~~ into a plurality of metal particles ~~(112)~~ by a thermal decomposition,

- application of a second intermediate layer ~~(152)~~ to the metal particles ~~(112)~~,

- application of a second photoactive layer stack ~~(160)~~ to the second intermediate layer ~~(152)~~.

4. Method for producing a photovoltaic cell ~~(100)~~, the method comprising:

- provision of a substrate ~~(101)~~,

- deposition of a transparent electrically conductive electrode ~~(110)~~ on the substrate ~~(101)~~,

- application of a photoactive layer stack ~~(120)~~ to the transparent electrically conductive electrode ~~(110)~~,

- application of a first retroreflector layer ~~(131)~~ to the photoactive layer stack ~~(120)~~,

- deposition of a metal oxide layer ~~(115)~~ on a surface of the first retroreflective layer ~~(131)~~ facing away from the substrate ~~(101)~~,

- subdivision of the metal oxide layer ~~(115)~~ into a plurality of metal particles ~~(112)~~ by a thermal decomposition,

- application of a second retroreflector layer ~~(132)~~ to the metal particles ~~(112)~~.

5. Method according to one of Claims 1-4, in which the metal oxide layer ~~(115)~~ is deposited by spluttering.

6. Method according to one of Claims 1-5, in which the metal oxide layer ~~(115)~~ contains silver, gold and/or platinum.

7. Method according to one of Claims 1-4, ~~in which~~ in which the temperature for thermal decomposition is less than or equal to 500°C.

8. Method according to one of Claims 1-7, in which the metal oxide layer ~~(115)~~ is decomposed in such a manner that the metal particles ~~(122)~~ have an average diameter of less than or equal to 100 nm.

9. Method according to one of Claims 1-8, in which gaseous oxygen is supplied during the deposition of the metal oxide layer ~~(115)~~.

10. Method according to Claim 1 or 2, in which the thickness ~~(117)~~ of the second transparent electrically conductive layer ~~(113)~~ is less than or equal to 50 nm.

11. Method according to Claim 4, in which the thickness ~~(133)~~ of the first retroreflector layer ~~(131)~~ is less than or equal to 50 nm.

~~12. Arrangement for a photovoltaic cell, comprising:~~

~~a substrate (101),~~

~~a transparent electrically conductive electrode (110) comprising two transparent electrically conductive sublayers (111, 113) on the substrate (101), as well as a two-dimensionally extended region between the two sublayers (111, 113) that contains a plurality of metal particles (112) from a metal oxide.~~

~~13. Arrangement, comprising:~~

~~a substrate (101),~~

~~a transparent electrically conductive electrode (110) comprising two transparent electrically conductive sublayers (111, 113) on the substrate (101), as well as a two-dimensionally extended region between the two sublayers (111, 113) that contains a plurality of metal particles (112) from a metal oxide,~~

~~a photoactive layer stack (120) on the electrically conductive electrode (110).~~

~~14. Arrangement, comprising:~~

~~a substrate (101),~~

~~a transparent electrically conductive electrode (110) on the substrate (101),~~

~~a first photoactive layer stack (120) on the transparent electrically conductive electrode (110),~~

~~an intermediate layer (150) comprising two sublayers (151, 152) on the layer stack (120), as well as a two-dimensionally extended region between the two sublayers (151, 152) that contains a plurality of metal particles (112) from a metal oxide,~~

~~a second photoactive layer stack (160) on the intermediate layer (150).~~

~~15. Arrangement, comprising:~~

~~a substrate (101),~~

~~a transparent electrically conductive electrode (110) on the substrate (101),~~

~~a first photoactive layer stack (120) on the electrically conductive electrode (110),~~

~~an retroreflector layer (130) comprising two sublayers (131, 132) on the layer stack (120), as well as a two-dimensionally extended region between the two sublayers (131, 132) that contains a plurality of metal particles (112) from a metal oxide.~~

~~16. Arrangement according to one of Claims 12-15, in which the metal particles (112) contain silver, gold and/or platinum.~~

~~17. Arrangement according to one of Claims 13-16, in which the thickness (117, 133) of the sublayer (113, 131) that faces the photoactive layer stack (120, 160) is less than or equal to 50 nm.~~

12.Arrangement for photovoltaic cell, comprising:

- a substrate and
- a transparent electrically conductive electrode produced according to a method according to one of claims 1 to 11.