CLAIMS

1. A solar cell comprising a stack of porous layers, a support substrate for supporting the stack, and a charge conducting medium penetrating through the stack, wherein the stack comprises:

a porous light-absorbing layer,

a porous first conductive layer including conductive material for extracting photo-generated electrons from the light-absorbing layer,

a porous counter electrode including conductive material, and

a separating layer made of porous electrically insulating material and arranged between the first conductive layer and the counter electrode, and where the first conductive layer is arranged closer to the light-absorbing layer than the counter electrode,

wherein the stack of porous layers is arranged on top of the support substrate, the support substrate is porous, and the charge conducting medium is penetrating through the support substrate.

2. The solar cell according to claim 1, wherein the charge conducting medium is integrally positioned in pores of the porous layers and pores of the support substrate, and the average size of the pores of the porous layers is smaller than the average size of the pores of the support substrate so that the capillary forces in the pores of the porous layers are stronger than the capillary forces in the pores of the support substrate.

3. The solar cell according to claim 1, any of claim 1, wherein the size of at least 80% of the pores in the porous layers is smaller than 3 μm.

4. The solar cell according to claim 1, wherein the size of at least 80% of the pores in the support substrate-is larger than 3 μm.

5. The solar cell according to claim 1, wherein the porosity of the support substrate is at least 50%, and preferably at least 70%, and most preferably at least 80%.

6. The solar cell according to claim 1, wherein the thickness of the support substrate is at least 20 μm, preferably at least 30 μm, and most preferably at least 50 μm.

7. The solar cell according to claim 1, wherein the support substrate comprises microfibres.

8. The solar cell according to claim 7, wherein the support substrate comprises microfibers having a diameter between 0.2 μm and 10 μm, preferably between 0.2 μm and 5 μm, and most preferably between 0.2 and 1 μm.

9. The solar cell according to claim 1, wherein the support substrate comprises woven and non-woven microfibers.

10. The solar cell according to claim 9, wherein the support substrate comprises a layer of woven microfibers and a layer of non-woven microfibers arranged on the layer of woven microfibers.

11. The solar cell according to claim 1, wherein the support substrate is flexible.

12. The solar cell according to claim 1, wherein the thickness of the separating layer is between 3 µm and 50 µm, and preferably between 15 and 35 µm, and most preferably between 4 µm and 20 µm.

13. The solar cell according to claim 1, wherein the charge conducting medium is a liquid electrolyte.

14. A method for manufacturing the solar cell according to claim 1, wherein the method comprises:

providing a porous support substrate,

depositing a porous counter electrode on the porous support substrate-,

depositing a porous separating layer on the counter electrode,

depositing a porous first conductive layer on the separating layer,

depositing a porous light-absorbing layer on the conductive layer,

introducing a charge conducting medium into the stack and the support substrate until the charge conducting medium is penetrating the support substrate and the stack,

sealing the solar cell.

15. The method according to claim 14, wherein depositing the porous counter electrode comprises depositing a porous second conductive layer and a porous catalytic layer on top of the second conductive layer.