CLAIMS:

1. A photovoltaic device including:
   a region of perovskite material which is in electrical contact with a mesoporous region of hole transport material, wherein the hole transport material is at least partially comprised of an inorganic hole transport material.
2. A photovoltaic device according to claim 1 wherein the inorganic hole transport material includes an oxide hole transport material.
3. A photovoltaic device according to any preceding claim wherein the inorganic hole transport material is a semiconductive material.
4. A photovoltaic device according to any preceding claim wherein the inorganic hole transport material is a p-type semiconductive material.
5. A photovoltaic device according to any preceding claim wherein the hole transport material is at least partially comprised of an organic hole transport material.
6. A photovoltaic device according to any preceding claim wherein the inorganic hole transport material is provided in a layer with a thickness of between about 100 nm to about 20 μm.
7. A photovoltaic device according to any preceding claim wherein the inorganic hole transport material is provided in a layer with a thickness of between about 150 nm to about 1000 nm.
8. A photovoltaic device according to any preceding claim wherein the inorganic hole transport material is provided in a layer with a thickness of between about 200 nm to about 500 nm.
9. A photovoltaic device according to any preceding claim wherein the inorganic hole transport material includes NiO, Cu_2O, CuO, $CuZO_2$, with Z including, but not limited to Al, Ga, Fe, Cr, Y, Sc, rare earth elements or any combination thereof, $AgCoO_2$ or other oxides, including delafossite structure compounds.
10. A photovoltaic device according to any preceding claim wherein the perovskite material is of formulae $A_{1+x}MX_{3-z}$, ANX_{4-z}, A_2MX_{4-z}, $A_3M_2X_{7-2z}$ or $A_4M_3X_{10-3z}$, wherein x is between 0.1 and -0.1 and z is between 0.1 and -0.1.

11. A photovoltaic device according to claim 10 wherein M is a mixture of monovalent and trivalent cations.
12. A photovoltaic device according to any preceding claim wherein the region of perovskite material comprises additives containing surface attaching groups such as but not limited to carboxylic or phosphonate groups.
13. A photovoltaic device according to any preceding claim wherein the perovskite material includes a homogeneous or heterogeneous mixture or layer-by-layer or side-by-side combination of two or more perovskite materials.
14. A photovoltaic device according to any preceding claim wherein the photovoltaic device comprises a cathode contact layer.
15. A photovoltaic device according to claim 14 wherein the cathode contact layer comprises carbon.
16. A photovoltaic device according to claim 14 wherein the cathode contact layer comprises aluminium, nickel, copper, molybdenum or tungsten.
17. A photovoltaic device according to any one of claims 14 to 16 further including an electron blocking layer between the region of hole transport material and the cathode contact layer.
18. A photovoltaic device according to any one of claims 14 to 16 further including an electron blocking layer between the region of perovskite material and the cathode contact layer.
19. A photovoltaic device according to any preceding claim further including a scaffold layer which provides a high surface area substrate for the perovskite material.
20. A photovoltaic device according to any preceding claim wherein the photovoltaic device comprises an anode contact layer.
21. A photovoltaic device according to claim 20 further including a hole blocking layer between a scaffold layer and the anode contact layer.
22. A photovoltaic device according to claim 20 further including a hole blocking layer between the region of perovskite material and the anode contact layer.
23. A photovoltaic device according to claim 19 further including a polymeric or ceramic porous separator layer between the region of hole transport material and the scaffold layer.
24. A photovoltaic device according to any preceding claim in which the perovskite material is intermixed with at least a region of one of a scaffold, a porous separator layer and/or the hole transport material.

25. A photovoltaic device according to any one of claims 1 to 23 in which the perovskite material is intermixed with at least a region of one of a scaffold, a porous separator layer, the hole transport material and/or a cathode contact layer.
26. A photovoltaic device according to any preceding claim in which at least a region of the hole transport material is intermixed with at least a region of a cathode contact layer and the perovskite material is intermixed with at least a region of one of a scaffold, a porous separator layer, the intermixed hole transport material and/or a cathode contact layer.
27. A photovoltaic device according to any preceding claim wherein the photovoltaic device comprises a substrate.
28. A photovoltaic device according to claim 27 wherein the substrate is a metal or metal foil.
29. A method of forming a photovoltaic device according to any preceding claim including the steps of:
preparing first and second sub-assemblies;
applying the perovskite material in a liquid preparation to at least one of the sub-assemblies; and
bringing the sub-assemblies together.
30. A method according to claim 29 wherein one of the subassemblies comprises a substrate, optionally an electron blocking layer, a carbon-based cathode contact layer and optionally a region of hole transport material.
31. A method according to claim 29 wherein one of the subassemblies comprises a substrate, optionally an electron blocking layer, a region of hole transport material and optionally a porous separator layer.