CLAIMS

1. A photovoltaic device comprising at least one nanowire structure fixed to a substrate, wherein each of the at least one nanowire structures comprises:

a heavily doped p-type core having a proximal end fixed to the substrate and a distal end extending away from the substrate; and

a lightly doped n-type shell around the p-type core so as to form a radial p-n junction;

wherein the p-type core is formed of GaAs and the n-type shell is formed of $Al_xGa_{1-x}As$, wherein x has a value of less than or equal to 0.2.

2. The photovoltaic device of claim 1, wherein the doping density of the p-type core is greater than 10^{18} cm^{-3}, preferably 10^{19} cm^{-3}.

3. The photovoltaic device of claim 1, wherein the doping density of the p-type core is greater than or equal to 10^{16} cm^{-3}, and less than 10^{18} cm^{-3}.

4. The photovoltaic device of any preceding claim, wherein the doping density of the n-type shell is less than 10^{17} cm^{-3}, preferably 10^{16} cm^{-3}.

5. The photovoltaic device of any preceding claim, wherein the n-type shell has a thickness of between 20nm and 50nm, and preferably 30nm ; and/or

wherein the diameter of the p-type core is greater than 300nm, and preferably 400nm.

6. The photovoltaic device of any preceding claim, wherein the length of the nanowire is between 5μm and 7μm, and preferably 6μm.

7. The photovoltaic device of any preceding claim, wherein the substrate comprises silicon; and/or

wherein the substrate comprises a graphitic layer.

8. The photovoltaic device of any preceding claim, wherein the distal end of the nanowire comprises an anti-reflection coating.