CLAIMS

1. A method of fabricating a catalyst on a substrate comprising:
providing the substrate;
applying a seed layer to the substrate;
forming a layer of metal on the seed layer, the layer of metal comprising one or more metals selected from Ni, Mo, Co, Fe, Cu, Mn and Zn; and
contacting the layer of metal with a corrosive metal halide solution to form the catalyst.

2. The method of claim 1, wherein the seed layer has a minimum thickness of approximately 50 nm.

3. The method of claim 1, wherein the seed layer has a thickness of approximately 100 nm.

4. The method of claim 1, wherein the seed layer comprises Ti and/or Ni.

5. The method of claim 4, wherein the seed layer comprises at least one of a layer of Ti and a layer of Ni.

6. The method of claim 1, wherein applying the seed layer to the substrate comprises depositing the seed layer by electron beam evaporation.

7. The method of claim 1, wherein applying the seed layer to the substrate comprises depositing the seed layer by thermal evaporation.

8. The method of claim 1, wherein applying the seed layer to the substrate comprises depositing the seed layer by sputter deposition.

9. The method of claim 1, wherein forming the layer of metal on the seed layer comprises electroplating the metal on the seed layer.

10. The method of claim 1, wherein the layer of metal has a thickness of 0.5 μm to 10 μm.

11. The method of claim 1, wherein the layer of metal is applied on the seed layer by electroplating the seed layer with a Ni(II) chloride solution as the electrolyte, to thereby form a layer of Ni on the seed layer.

12. The method of claim 1, wherein the layer of metal comprises two or more metals.

13. The method of claim 1, wherein forming the layer of metal on the seed layer comprises applying a metal plate or foil on the seed layer.

14. The method of claim 1, wherein the substrate is an electrode.

15. The method of claim 1, wherein the substrate is a photovoltaic cell.

16. The method of claim 15, wherein substrate is a GaAs photovoltaic cell.

17. The method of claim 1, wherein the catalyst comprises one or more metal hydroxides.

18. The method of claim 1, wherein the corrosive metal halide solution is a transition metal halide solution.

19. The method of claim 18, wherein the corrosive metal halide solution comprises one or more transition metal chlorides.

20. The method of claim 19, wherein the corrosive metal halide solution comprises a mixture of Ni(II) and Fe(III) chlorides.