The claims defining the invention are as follows:

1. A method for generation of an oxidant solution using an electrochemical cell having an anode and a cathode, the method comprising the steps of:

(i) supplying a feedstock electrolyte to a reaction area between the anode and cathode, the feedstock electrolyte consisting of sulphate ions (SO_4^{2-}) and ferrous ions (Fe^{2+}); and

(ii) in an operational cycle, electrolysing the feedstock electrolyte to produce an oxidised acid solution comprising peroxydisulphate ($S_2O_8^{2-}$) and ferric ions (Fe^{3+}).

2. A method according to claim 1 wherein the concentration of sulphate ions (SO_4^{2-}) in the feedstock electrolyte is between 0.1 molar and 5 molar.

3. A method according to claim 1 or claim 2 wherein the concentration of ferrous ions (Fe^{2+}) in the feedstock electrolyte (Fe^{2+}) is between 0.1 and 0.5 molar.

4. A method according to any one of the preceding claims wherein the ratio of SO_4^{2-}: Fe^{2+} is between 1 : 0.05 and 1 : 0.5.

5. A method according to claim 1 wherein the anode comprises boron doped diamond.

6. A method for generation of an oxidant solution using an electrochemical cell according to any one of the preceding claims having an anodic half-cell comprising the anode and a cathodic half-cell comprising the cathode, the method comprising the steps of:

(i) supplying to the anodic half-cell, the feedstock electrolyte which enters and exits a fluid path formed between the anode and cathode, the feedstock electrolyte consisting of sulphate ions (SO_4^{2-}) and ferrous ions (Fe^{2+}); and

(ii) in an operational cycle, electrolysing the feedstock electrolyte to produce an anolyte solution comprising peroxydisulphate ($S_2O_8^{2-}$) and ferric ions (Fe^{3+}).

7. A method for generation of an oxidant solution according to claim 6 wherein a separator is located between the anodic half-cell and cathodic half-cell.

8. A method for generation of an oxidant solution using an electrochemical cell according to any one of the preceding claims including the further steps of regenerating the oxidant solution by:

(iii) supplying said oxidised acid solution to a metal containing waste, such that the ferric ions (Fe^{3+}) are reduced to ferrous ions (Fe^{2+}); and

(iv) bringing peroxydisulphate ($S_2O_8^{2-}$) into contact with the ferrous ions (Fe^{2+}) to regenerate ferric ions (Fe^{3+}) and sulphate ions (SO_4^{2-}).

9. A system for generation of an oxidant solution according to any one of the previous claims, comprising:

(a) an anode and a cathode defining a reaction area of an electrochemical cell,

(b) an input port and flow controller for passage of aqueous feedstock electrolyte through between the electrodes, the feedstock electrolyte consisting of sulphate ions (SO_4^{2-}) and ferrous ions (Fe^{2+}), the sulphate ions and ferrous ions being selected for electrochemical generation of an oxidant comprising peroxydisulphate ($S_2O_8^{2-}$) and ferric ions (Fe^{3+});

(c) current means for supplying current for electrolysing the aqueous feedstock electrolyte to produce an oxidant solution in the reaction area containing said oxidant, and

(d) an output port for supplying the oxidant solution from the electrochemical cell.

10. A system for on-site generation of an oxidant solution according to any one of claims 1 to 8, comprising:

(a) an anodic half-cell and a cathodic half-cell,

(b) an input port and flow control means for passage of aqueous feedstock electrolyte through the anodic half-cell, the feedstock electrolyte consisting of sulphate ions (SO_4^{2-}) and ferrous ions (Fe^{2+}), the sulphate ions and ferrous ions being selected for electrochemical generation of an oxidant comprising peroxydisulphate ($S_2O_8^{2-}$) and ferric ions (Fe^{3+});

(c) current means for supplying current for electrolysing the aqueous feedstock electrolyte to produce an oxidant solution in the anodic half-cell containing said oxidant, and

(d) an output port for supplying the oxidant solution from the electrochemical cell from the anodic half-cell.

11. A system for generation of an oxidant solution according to claim 10 wherein a separator is located between the anodic half-cell and the cathodic half-cell.

12. A system according to any one of claims 9 to 11 wherein the oxidant solution is used for metal extraction, preferably extraction of one or more metals chosen from the group comprising Cu, Co, Ni, V, Cr, Mn, Fe, Au, Ag, Pt, Pd, Rh, Ir, Ru, Te, Ga, Se, Ta, Ge Pb, Cd, In and Sb.

13. A system according to claim 12 wherein the metal is extracted from e-waste or minerals.

14. A method of leaching metal from metal containing waste, the method including the step of supplying the oxidant solution generated by the method of any one of claims 1 to 7, and bringing the oxidant solution into contact with the metal containing waste.

15. A method of leaching metal according to claim 14, wherein the metal leached is chosen from the group comprising Cu, Co, Ni, V, Cr, Mn and Fe.