Claims:

1. A method of producing a carboxylate ligand modified ferric iron hydroxide formulation, the method comprising

mixing a colloidal suspension of the carboxylate ligand modified ferric iron hydroxide in a water miscible non-aqueous solvent to cause the carboxylate ligand modified ferric iron hydroxide to agglomerate;

recovering the agglomerated carboxylate ligand modified ferric iron hydroxide; and

drying the carboxylate ligand modified ferric iron hydroxide to produce the carboxylate ligand modified ferric iron hydroxide formulation, wherein the carboxylate ligand comprises one or more dicarboxylate ligands;

wherein the carboxylate ligand modified ferric iron hydroxide has a three dimensional polymeric structure in which the carboxylate ligands are non-stoichiometrically substituted for the oxo or hydroxy groups of the ferric iron hydroxide so that some of the ligand integrates into the solid phase by formal metal-ligand bonding.

2. The method of claim 1, wherein the water miscible non-aqueous solvent is selected from ethanol, methanol and/or acetone

3. The method of claim 1 or claim 2, wherein the three dimensional polymeric structure of the carboxylate ligand modified ferric iron hydroxide is such that the substitution of the oxo or hydroxy groups by the carboxylate ligands is substantially random.

4. The method of any one of claims 1 to 3, wherein the method further comprises the initial steps of mixing a solution of ferric iron ions and one or more carboxylic acid ligands or carboxylate ligands and increasing the pH of the solution to cause formation of the colloidal suspension of the carboxylate ligand modified ferric iron hydroxide, optionally wherein the pH is increased by the addition of alkali,

optionally wherein the alkali is sodium hydroxide.

5. The method of claim 4, wherein the pH is increased to a pH between 7.0 and 9.0, optionally wherein the pH is increased to a pH between 7.4 and 8.5.

6. The method of any one of the preceding claims, wherein the carboxylate ligand modified ferric iron hydroxide formulation comprises adipate and tartrate ligands or tartrate and succinate ligands or succinate and adipate ligands, optionally wherein the ligands and ferric iron ions are present in a molar ratio of 1:1:2 (tartrate: adipate: Fe), 1:1:2 (tartrate: succinate: Fe), 1:6:2 (tartrate: succinate) or 1:1:2 (succinate: adipate: Fe).

7. The method of any one of the preceding claims, wherein:

(a) the concentration of ferric iron is between 20 mM and 1000 mM, the concentration of adipate is between 10 mM and 150 mM and the concentration of tartrate is between 10 mM and 500 mM; or

(b)the concentration of ferric iron ions is between 20 mM and 80 mM, the concentration of adipate is between 10 mM and 40 mM and the concentration of tartrate is between 10 mM and 40 mM; or

(c) the concentration of ferric iron is about 40 mM, the concentration of adipate is about 20 mM and the concentration of tartrate is about 20 mM; or

(d) the concentration of ferric iron is about 200 mM, the concentration of adipate is about 100mM and the concentration of tartrate is about 100 mM.

8. The method of any one of claims 1 to 7, wherein the carboxylate ligand modified ferric iron hydroxide formulation comprises tartrate/tartaric acid ligands.

9. The method of any one of the preceding claims, wherein:

(a) the ratio of the volume of the water miscible non-

aqueous solvent to the colloidal suspension of the carboxylate ligand modified ferric iron hydroxide is between 1:1 and 5:1; and/or

(b) the water miscible non-aqueous solvent is ethanol; and/or

(c) the drying step takes 24 hours or less at 45°C; and/or

(d) the steps of aggregating the suspension and recovering the agglomerated carboxylate ligand modified ferric iron hydroxide removes unreacted ferric iron ions (Fe^{3+}), sodium chloride and/or one or more carboxylic acid ligands or carboxylate ligands from the carboxylate ligand modified ferric iron hydroxide.

10. The method of any one of the preceding claims, wherein the carboxylate ligand modified ferric iron hydroxide has an iron content of at least 10% Fe (w/w), or at least 20% Fe (w/w).

11. The method of any one of the preceding claims, where carboxylate ligand modified ferric iron hydroxide formulation has a mean particle size between 1 and 10 nm.

12. The method of any one of the preceding claims, wherein the ligand disrupts the structure of the material as determined using X-ray diffraction (XRD), optionally wherein the material has a structure that is consistent with modified ferrihydrite.

13. The method of any one of the preceding claims, further comprising the step of milling or micronizing the carboxylate ligand modified ferric iron hydroxide composition and/or further comprising the step of formulating the carboxylate ligand modified ferric iron hydroxide composition by mixing it with one or more pharmaceutically acceptable excipients.

14. The method of claim 13, further comprising making tablets or capsules.

15. The method of any one of the preceding claims, wherein the carboxylate ligand modified ferric iron hydroxide composition is formulated for oral delivery.

16. An iron supplement tablet, capsule or powder comprising a carboxylate ligand modified ferric iron hydroxide composition as obtainable by the method of any one of the preceding claims.

17. A carboxylate ligand modified ferric iron hydroxide material as obtainable by the method of any one of claims 1 to 15, wherein the material has a three dimensional polymeric structure in which the carboxylate ligands are non-stoichiometrically substituted for the oxo or hydroxy groups of the ferric iron hydroxide so that some of the ligand integrates into the solid phase by formal metal-ligand bonding, wherein the three dimensional polymeric structure of the carboxylate ligand modified ferric iron hydroxide is such that the substitution of the oxo or hydroxy groups by the carboxylate ligands is substantially random, and wherein on dispersion in water the material produces a microparticulate ferric iron fraction comprising less than 3.0% of the total ferric iron present in the material when dispersed in water at a concentration of 40mM Fe.

18. An iron supplement tablet, capsule or powder comprising a carboxylate ligand modified ferric iron hydroxide composition of claim 16 or a carboxylate ligand modified ferric iron hydroxide material of claim 17 for use in a method of treating iron deficiency anaemia, iron deficiency and anaemia of chronic disease, optionally wherein the iron supplement tablet, capsule or powder or the carboxylate ligand modified

ferric iron hydroxide material is formulated for oral delivery.

19. The iron supplement tablet, capsule or powder comprising a carboxylate ligand modified ferric iron hydroxide composition for use according to claim 18, wherein the iron deficiency anaemia, iron deficiency and anaemia of chronic disease is due to inadequate nutrition or excessive iron losses, or is associated with stresses such as pregnancy or lactation, or is associated with diseases such as inflammatory disorders, cancers or renal insufficiency.