CLAIMS

1.) A pharmaceutically acceptable suspension comprising:

a.) pharmaceutical grade water;

b.) at least one processing enhancer selected from the group of materials consisting of sodium bicarbonate, sodium carbonate, potassium bicarbonate, potassium carbonate, trisodium phosphate, disodium phosphate, monosodium phosphate and potassium phosphate; and

c.) gold nanocrystals suspended in said water forming a suspension, wherein said gold nanocrystals:

i.) have surfaces that include at least one characteristic selected from the group of characteristics consisting of: (1) no organic chemical constituents adhered or attached to said surfaces and/or (2) are substantially clean and do not have chemical constituents adhered or attached to surfaces, other than water or said processing enhancer, which alter the functioning of said nanocrystals;

ii.) have a mode particle size of less than 50nm;

iii.) are present in said suspension at a concentration of 2-200ppm; and

wherein

said suspension has a pH of between 4 to 9.5, and a zeta potential of at least -20mv.

2.) The composition of claim 1, wherein said processing enhancer comprises sodium bicarbonate.

3.) The composition of claim 1, wherein said suspension has a zeta potential of at least -30 mV.

4.) The composition of claim 1, wherein said suspension has a zeta potential of at least -40 mV.

5.) The composition of claim 1, wherein said suspension has a zeta potential of at least -50 mV.

6.) A pharmaceutical suspension comprising:

a.) pharmaceutical grade water containing at least one processing enhancer selected from the group of materials consisting of sodium bicarbonate, sodium carbonate, potassium bicarbonate, potassium carbonate, trisodium phosphate, disodium phosphate, monosodium phosphate and potassium phosphate;

b.) shaped gold nanocrystals in said water forming said suspension, said suspension having a zeta potential of at least -20mV, and a pH of between 5 to 9.5; and wherein said gold nanocrystals:

i.) have surfaces that include at least one characteristic selected from the group of characteristics consisting of: (1) no organic chemical constituents adhered or attached to said surfaces and/or (2) are substantially clean and do not have chemical constituents adhered or attached to surfaces, other than water or said processing enhancer, which alter the functioning of said nanocrystals;

ii.) have a mode particle size of less than 50nm;

iii.) are present in said suspension at a concentration of 2-200ppm; and

iv.) have shapes comprising pentagonal biopyramids and tetrahedrons in a range of 15% to 50%.

7.) The composition of claim 6, wherein said suspension has a zeta potential of at least -40 mV.

8.) A suspension comprising:

a.) pharmaceutical grade water containing at least one processing enhancer selected from the group of materials consisting of sodium bicarbonate, sodium carbonate, potassium bicarbonate, potassium carbonate, trisodium phosphate, disodium phosphate, monosodium phosphate and potassium phosphate;

b.) gold nanocrystals in said water forming said suspension, said suspension having a zeta potential of at least -20mV and a pH of between 5 to 9.5; and wherein said gold nanocrystals:

i.) have surfaces that include at least one characteristic selected from the group of characteristics consisting of: (1) no organic chemical constituents adhered or attached to said surfaces and/or (2) are substantially clean and do not have chemical constituents adhered or attached to surfaces, other than water or said processing enhancer, which alter the functioning of said nanocrystals;

ii.) have a mode particle size of less than 50nm; and

iii.) are present in said suspension at a concentration of 2-200ppm.

9.) The composition of claim 8, wherein said suspension has a zeta potential of at least -40 mV.

10.) Use of an effective amount of the pharmaceutically acceptable suspension of claim 1 in preparation of a medicament for treating a patient with an arthritic condition.

11.) The use of claim 10, wherein the arthritic condition is rheumatoid arthritis.

12.) Use of an effective amount of the pharmaceutically acceptable suspension of claim 1 for preparation of a medicament for treating a patient with a condition selected from the group consisting of rheumatoid arthritis, osteoarthritis, systemic lupus erythematosus, ulcerative colitis, Crohn's disease, multiple sclerosis, psoriasis, eczema, uveitis, diabetes mellitus, glomerulonephritis, atherosclerotic vascular disease and infarction, asthma, chronic obstructive pulmonary disease, HIV, HBV, HCV, tuberculosis, malaria, worms, pain and cancer(s).

13.) The use of claim 12, wherein the condition is Crohn's disease.

14.) The use of claim 12, wherein the condition is pain.

15.) The use of claim 12, wherein the condition is an autoimmune disease.

16.) The use of claim 12, wherein the condition is an inflammatory condition.

17.) The use of claim 10, wherein the medicament is to be administered orally.

18.) A process for forming the suspension according to any one of claims 1-9:

providing at least one processing enhancer selected from the group of materials consisting of sodium bicarbonate, sodium carbonate, potassium bicarbonate, potassium carbonate, trisodium phosphate, disodium phosphate, monosodium phosphate and potassium phosphate in said water;

flowing said water through at least one trough member, said water having an upper surface and a flow direction;

providing at least one adjustable plasma which communicates with at least a portion of said upper surface of said flowing water;

providing at least one set of gold electrodes in contact with said flowing water and located downstream in said flow direction from said at least one adjustable plasma; and

conducting at least one electrochemical reaction at said at least one set of gold electrodes.

19.) The product manufactured by the method of claim 18.

20.) A pharmaceutically acceptable suspension composition comprising:

a.) water;

b.) a processing enhancer; and

c.) gold nanocrystals suspended in said water forming a suspension, wherein said gold nanocrystals:

i.) have surfaces that:

(1) are substantially free from organic or other impurities or films; or

(2) do not have chemical constituents adhered or attached to them that form a layer, surface or film which covers at least 50% of the crystal, and preferably at least 25% of the crystal;

ii.) have a mode particle size of less than 100nm;

iii.) are present in said suspension at a concentration of 2-200ppm; and

iv.) contain at least one spatially extended low index crystal plane selected from the group consisting of {111}, {110}, and {100} and their equivalents; and

wherein said suspension has a pH of between 4.0 to 9.5 and a zeta potential of at least -20mV.

21.) A composition as claimed in claim 20 for use in the treatment of a patient with a condition selected from the group consisting of rheumatoid arthritis, osteoarthritis, systemic lupus erythematosus, ulcerative colitis, Crohn's disease, multiple sclerosis, psoriasis, eczema, uveitis, diabetes mellitus, glomerulonephritis, atherosclerotic vascular disease and infarction, asthma, chronic obstructive pulmonary disease, HIV, HBV, HCV, tuberculosis, malaria, worms, pain and cancer(s).

22.) Use of a pharmaceutically acceptable suspension composition comprising:

a.) water;

b.) a processing enhancer; and

c.) gold nanocrystals suspended in said water forming a suspension, wherein said gold nanocrystals:

i.) have surfaces that:

(1) are substantially free from organic or other impurities or films; or

(2) do not have chemical constituents adhered or attached to them that form a layer, surface or film which covers at least 50% of the crystal, and preferably at least 25% of the crystal;

ii.) have a mode particle size of less than 100nm;

iii.) are present in said suspension at a concentration of 2-200ppm; and

iv.) contain at least one spatially extended low index crystal plane selected from the group consisting of {111}, {110}, and {100} and their equivalents; and

wherein said suspension has a pH of between 4.0 to 9.5 and a zeta potential of at least -20mV, in the manufacture of a medicament for the treatment of a patient with a condition selected from the group consisting of rheumatoid arthritis, osteoarthritis, systemic lupus erythematosus, ulcerative colitis, Crohn's disease, multiple sclerosis, psoriasis, eczema, uveitis, diabetes mellitus, glomerulonephritis, atherosclerotic vascular disease and infarction, asthma, chronic obstructive pulmonary disease, HIV, HBV, HCV, tuberculosis, malaria, worms, pain and cancer(s).