CLAIMS

1.) A pharmaceutically acceptable suspension comprising:

a.) pharmaceutical grade water;

b.) at least one processing enhancer; 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 about 50nm;

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

d.) said suspension having a pH of between about 5 to about 9.5, a zeta potential of at least about -20mv and the suspension does not contain chlorides.

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 about -30 mV.

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

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

6.) A pharmaceutical suspension comprising:

a.) pharmaceutical grade water containing at least one processing enhancer, said water having a pH of between about 5 to about 9.5;

b.) shaped gold nanocrystals in said water forming said suspension, said suspension having a zeta potential of at least about -20mV 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 about 50nm;

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

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

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

8.) A suspension comprising:

a.) pharmaceutical grade water containing at least one processing enhancer, said water having a pH of between about 5 to about 9.5;

b.) gold nanocrystals in said water forming said suspension, said suspension having a zeta potential of at least about -20mV 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 about 50nm; and

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

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

10.) Use of a pharmaceutically acceptable suspension comprising:

a.) pharmaceutical grade water;

b.) at least one processing enhancer; 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 about 50nm;

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

d.) said suspension having a pH of between about 5 to about 9.5, a zeta potential of at least about -20mv and the suspension does not contain chlorides,

in the manufacture of a medicament for the treatment of an arthritic condition.

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

12.) Use of a pharmaceutically acceptable suspension comprising:

a.) pharmaceutical grade water;

b.) at least one processing enhancer; 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 about 50nm;

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

d.) said suspension having a pH of between about 5 to about 9.5, a zeta potential of at least about -20mv and the suspension does not contain chlorides,

in the manufacture of a medicament for the treatment of a condition receptive to gold therapy.

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 11, wherein the medicament is to be administered orally.

18.) A process for forming gold nanoparticles suspended in water:

providing at least one processing enhancer in said water;

providing at least one trough member;

creating a flow direction of said water through said at least one trough member;

providing at least one metallic-based plasma forming electrode spaced apart from a surface of said water, thereby forming a space between said at least one metallic-based plasma-forming electrode and said surface of said water;

forming at least one plasma in said space between said at least one metallic-based plasma forming electrode and said surface of said water;

providing at least one set of electrodes contacting said water, said at least one set of electrodes contacting said water after said water has flowed past said at least one metallic-based plasma forming electrode; and

causing said at least one set of electrodes to react with said water as said water contacts said at least one set of electrodes, whereby said gold nanoparticles are formed in said water.

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

CLAIMS

1.) A gold nanocrystal comprising:

A surface which is substantially free from organic impurities or films; and

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

2.) The gold nanocrystal of claim 1, wherein the nanocrystal is less than 20 nm in its longest dimension.

3.) The gold nanocrystal of claim 2, wherein the nanocrystal comprises a shaped crystal of at least one of a tetrahedron and decahedron.

4.) The gold nanocrystal of claim 1, wherein the nanocrystal is made by a process comprising electrochemistry in water.

5.) The gold nanocrystal of claim 2, wherein the nanocrystal is suspended in water.

6.) The gold nanocrystal of claim 3, wherein a plurality of shaped crystals are suspended in water.

7.) The gold nanocrystal of claim 6, wherein the percent of said shaped crystals in said water is 5-35%., thereby forming a suspension.

8.) The suspension of claim 6, wherein the percent of said shaped crystals in said water is 5-35%.

9) The suspension of claim 8, wherein both shaped crystals comprising tetrahedrons and decahedrons are present.

10.) The suspension of claim 8, wherein both shaped crystals comprising tetrahedrons and decahedrons are present.

11.) The suspension of claim 10, wherein both shaped crystals comprising tetrahedrons and decahedrons are present in a range of 15% - 50%.

12.) The suspension of claim 11, wherein said shaped crystals have an average crystal size of less than 20nm.

13) A suspension of gold nanocrystals in water comprising:

crystals having a mode particle size of not greater than 20 nm;

tetrahedral-shaped crystals and decahedral-shaped crystals present in a combined amount of 16-66 percent by number relative to other nanoparticles in said water; and

crystals having surfaces substantially free from organic impurities or films.

14.) The suspension of claim 13, wherein said surfaces are substantially completely free from organic impurities or films.

15.) The suspension of claim 13, wherein said surfaces are completely free from organic impurities or films.

16.) The suspension of claim 15, wherein said crystals are present in an amount of at least 30%.

17.) The suspension of claim 15, wherein said crystals are present in an amount of at least 40%.

18.) The suspension of claim 15, wherein said crystals are present in an amount of at least 5 micrograms per milliliter.

19.) The suspension of claim 13, wherein said crystals are present in an amount of about 2 - 100 micrograms per milliliter.

20.) The composition of claim 13, comprising utilizing said composition for the treatment of arthritis.

21) The composition of claim 13, comprising utilizing said composition for the treatment of multiple sclerosis.

22.) The composition of claim 13, comprising utilizing said composition for the treatment of at least one indication selected form the group consisting of inflammatory conditions, chronic inflammatory conditions, autoimmune conditions, hypersensitivity reactions and cancerous diseases or conditions.

23.) The composition of claim 13, comprising utilizing said composition for the treatment of any disease where MIF is indicated.

24.) A method for growing a gold nanocrystal in water comprising:

Adding at least one processing enhancer to said water;

Contacting at least one set of gold electrodes with said water;

Applying an AC voltage to said at least one set of gold electrodes to permit gold nanocrystals to grow into a shape of at least one shape selected from the group consisting of a tetrahedron and decahedron.

25.) The method of claim 24, wherein said gold nanocrystals have a mode particle size of not greater than 20 nm.

26.) The method of claim 24, wherein said AC voltage comprises a voltage of 20 – 2000Volts.

27.) The method of claim 24, wherein said AC voltage comprises a voltage of 100 – 300Volts.

28.) The method of claim 24, wherein said water in contained in a trough member.

29.) The method of claim 28, wherein said water continuously flows trough said trough member when said AC voltage is applied.

30.) The method of claim 29, wherein said water that continuously flows trough said trough member exits said trough member with a pH of at least 8.

31.) The method of claim 24, wherein no organic compounds are added to said water.