WHAT IS CLAIMED IS:

1. A process for producing a concentrated nanotitania sol comprising:

(a) contacting an acidic nano titania sol with a dispersant comprising at least one of a water soluble carboxylic acid, a water soluble salt of a carboxylic acid, a water soluble polycarboxylic acid, a phosphate or a silicate, and with an alkalizing agent wherein the pH of the nano titania sol after contacting is in a range of between about 4.0 and about 10.0; and

(b) subjecting the pH adjusted nano titania sol to membrane filtration and continuing such membrane filtration until the nano titania sol contains more than 300 g $TiO_2$ nanoparticles/$dm^3$.

2. The process according to claim 1, wherein the nano titania sol contains more than 500g $TiO_2$ nanoparticles/$dm^3$.

3. The process according to claim 1 or 2, wherein the membrane filtration is crossflow filtration or crossflow filtration with vibration.

4. The process according to claim 1 or 2, or claim 3, wherein the provided acidic nano titania sol is produced from a substantially sulphate-ion-free aqueous suspension of titania hydrate contacted with a strong monoprotic acid.

5. The process according to claim 1 or 2, or claim 3 or 4, wherein the water soluble carboxylic acid is an α-hydroxy carboxylic acid or a β-hydroxy carboxylic acid and the water soluble polycarboxylic acid is a dicarboxylic acid or a tricarboxylic acid.

6. The process according to claim 1 or 2, or any of claims 3-5, wherein the water soluble carboxylic acid is citric acid.

7. The process according to claim 1 or 2, or any of claims 3-6, wherein the nano titania sol consists essentially of anatase $TiO_2$ nanoparticles having a particle size of less than 150 nm.

8. The process according to claim 7, wherein the $TiO_2$ nanoparticles have a particle size of less than 100 nm.

9. The process according to claim 1 or 2, or any of claims 3-8, wherein the alkalizing agent is a water soluble alkanolamine or choline hydroxide.

10. The process according to claim 1 or 2, or any of claims 3-9, wherein the pH adjusted nano titania sol is contacted with a washing agent during step (b) for a period of time sufficient to reduce the nano titania sol's conductivity to less than 10 mS/cm.

11. A concentrated aqueous nano titania sol produced according to the process of claim 1 or 2, or any of claims 3-10.

12. The process according to any one of claims 1-10, wherein the nano titania sol is subjected to a coating treatment either before step (b) or during step (b) after the pH adjusted nano titania sol has been contacted with the washing agent to remove soluble salts from the nano titania sol but prior to concentrating the nano titania sol.

13. The process according to claim 12, wherein the coating treatment comprises contacting the nano titania sol with an alkaline coating agent and a cation exchange resin at a rate such that the pH of the nano titania sol remains in a range between about 4.0 and about 10.0 during the coating treatment.

14. The process according to claim 12, wherein the coating treatment comprises contacting the nano titania sol with an acidic coating agent and an anion exchange resin at a rate such that the pH of the nano titania sol remains in a range between about 4.0 and about 10.0 during the coating treatment.

15. The process according to claim 13, wherein the alkaline coating agent comprises sodium silicate, potassium silicate, sodium aluminate or mixtures thereof.

16. The process according to claim 14, wherein the acidic coating agent comprises aluminum chloride, aluminum sulphate or a mixture thereof.

17. A concentrated aqueous nano titania sol produced according to the process of any one of claims 12-16.

18. A catalytic composition comprising the concentrated aqueous nano titania sol produced according to the process of any one of claims 1-10.

19. A method for protecting a surface of a substrate from UV radiation comprising applying the concentrated aqueous nanotitania sol produced according to the process of any one of claims 12-16, optionally in the presence a binder medium, to the surface of the substrate to form a protective coating on the surface of the substrate.

20. A method for degrading or inactivating contaminants or pollutants that contact a surface comprising applying a catalytic composition comprising the concentrated aqueous nanotitania sol produced according to the process of any one of claims 1-10 to the surface and allowing the surface to be irradiated with UV/visible light while the contaminants or pollutants contact the surface.

21. A coating or article comprising the concentrated aqueous nano titania sol produced according to the process of any one of claims 1-10 or 12-16.

22. A process for producing a concentrated nanotitania sol comprising:

(a) providing an acidic nano titania sol;

(b) contacting the acidic nano titania sol with a dispersant comprising at least one of a water soluble carboxylic acid, a water soluble salt of a carboxylic acid, a water soluble polycarboxylic acid, a phosphate or a

silicate, and with an alkalizing agent wherein the pH of the nano titania sol after contacting is in a range of between about 4.0 and about 10.0; and

(c) subjecting the pH adjusted nano titania sol to membrane filtration and continuing such membrane filtration until the nano titania sol contains more than 300 g $TiO_2$ nanoparticles/$dm^3$.

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