What is claimed is:

1. A method of making an article comprising:
providing a substrate;
electrostatically depositing particles such that the particles are bonded to the substrate wherein the particles comprise
i) a plurality of particles having a median primary particle size of less than 75 microns, and
ii) discrete hydrophobic nanoparticles.

2. The method of claim 1 wherein the nanoparticles comprise a metal oxide material and the nanoparticles comprise a hydrophobic surface treatment.

3. The method of claim 1 wherein the particles comprise abrasive particles.

4. The method of claim 3 wherein the abrasive particles are orientated.

5. The method of claim 3 wherein the abrasive particles comprise fused aluminum oxide, heat-treated aluminum oxide, ceramic aluminum oxide, silicon carbide, alumina zirconia, garnet, diamond, cubic boron nitride, sol-gel derived abrasive particles, or a mixture thereof.

6. The method of claim 1 wherein the nanoparticles are present in an amount up to 2 wt-%.

7. The method of claim 1 wherein the particles have a median particle size of less than 50 microns.

8. The method of claim 1 wherein the particles have a median particle size of less than 25 microns.

9. The method of claim 1 wherein the nanoparticles have a particle size of less than 100 nanometers.

10. The method of claim 1 wherein the particles have a median primary particle size 100 to 10,000 times larger than the mean particle size of the nanoparticles.

11. The method of claim 2 wherein the nanoparticles comprise silica, zirconia, or a mixture thereof.

12. The method of claim 2 wherein the hydrophobic surface treatment is an organosilane compound.

13. An abrasive grain comprising:

i) a plurality of abrasive particles having a median primary particle size of less than 75 microns, and

ii) discrete hydrophobic nanoparticles.

14. The abrasive grain of claim 13 wherein the nanoparticles comprise a metal oxide material and the nanoparticles comprise a hydrophobic surface treatment.

15. The abrasive grain of claim 13 wherein the abrasive particles comprise fused aluminum oxide, heat-treated aluminum oxide, ceramic aluminum oxide, silicon carbide, alumina zirconia, garnet, diamond, cubic boron nitride, sol-gel derived abrasive particles, or a mixture thereof.

16. The abrasive grain of claim 13 wherein the particles have a median particle size of less than 50 microns.

17. The abrasive grain of claim 13 wherein the particles have a median particle size of less than 25 microns.

18. The abrasive grain of claim 13 wherein the nanoparticles have a particle size of less than 100 nanometers.

19. The abrasive grain of claim 13 wherein the particles have a median primary particle size 100 to 10,000 times larger than the mean particle size of the nanoparticles.

20. The abrasive grain of claim 14 herein the nanoparticles comprise silica, zirconia, or a mixture thereof.

21. The abrasive grain of claim 14 wherein the hydrophobic surface treatment is an organosilane compound.

22. An abrasive article comprising:
a substrate; and
a plurality of abrasive particles according to any of claims 13-21 bonded to the substrate.

23. The abrasive article of claim 22 wherein the substrate is a cloth, polymeric film, fiber, nonwoven web, paper, or a combination thereof.

24. The abrasive article of claim 22 wherein the particles are orientated.

25. A method of repair of a painted surface comprising:
providing a painted surface having a surface defect;
removing the surface defect by abrading with the abrasive article of any of claims 22 to 24.

CLAIMS

1. A method of making an article comprising:

providing a substrate;

electrostatically depositing particles such that the particles are adhered by a binder to the substrate wherein the particles comprise

i) a plurality of particles having a median primary particle size of less than 75 microns, and

ii) discrete hydrophobic unaggregated nanoparticles, wherein the nanoparticles have an average primary particle size of less than 100 nanometers.

2. The method of claim 1 wherein the nanoparticles comprise a metal oxide material and the nanoparticles comprise a hydrophobic surface treatment.

3. The method of claim 1 wherein the particles comprise abrasive particles.

4. The method of claim 3 wherein the abrasive particles are orientated.

5. The method of claim 3 wherein the abrasive particles comprise fused aluminum oxide, heat-treated aluminum oxide, ceramic aluminum oxide, silicon carbide, alumina zirconia, garnet, diamond, cubic boron nitride, sol-gel derived abrasive particles, or a mixture thereof.

6. The method of claim 1 wherein the nanoparticles are present in an amount up to 2 wt-%.

7. The method of claim 1 wherein the particles have a median particle size of less than 50 microns.

8. The method of claim 1 wherein the particles have a median particle size of less than 25 microns.

9. The method of claim 1 wherein the particles have a median primary particle size 100 to 10,000 times larger than the average particle size of the nanoparticles.

10. The method of claim 2 wherein the nanoparticles comprise silica, zirconia, or a mixture thereof.

11. The method of claim 2 wherein the hydrophobic surface treatment is an organosilane compound.

12. An abrasive grain comprising:

i) a plurality of abrasive particles having a median primary particle size of less than 75 microns, and

ii) discrete hydrophobic unaggregated nanoparticles, wherein the nanoparticles have an average primary particle size of less than 100 nanometers.

13. The abrasive grain of claim 12 wherein the nanoparticles comprise a metal oxide material and the nanoparticles comprise a hydrophobic surface treatment.

14. The abrasive grain of claim 12 wherein the abrasive particles comprise fused aluminum oxide, heat-treated aluminum oxide, ceramic aluminum oxide, silicon carbide, alumina zirconia, garnet, diamond, cubic boron nitride, sol-gel derived abrasive particles, or a mixture thereof.

15. The abrasive grain of claim 12 wherein the particles have a median particle size of less than 50 microns.

16. The abrasive grain of claim 12 wherein the particles have a median particle size of less than 25 microns.

17. The abrasive grain of claim 12 wherein the particles have a median primary particle size 100 to 10,000 times larger than the average particle size of the nanoparticles.

18. The abrasive grain of claim 13 wherein the nanoparticles comprise silica, zirconia, or a mixture thereof.

19. The abrasive grain of claim 13 wherein the hydrophobic surface treatment is an organosilane compound.

20. An abrasive article comprising:
a substrate; and
a plurality of abrasive grain particles according to any of claims 12-19 bonded to the substrate.

21. The abrasive article of claim 20 wherein the substrate is a cloth, polymeric film, fiber, nonwoven web, paper, or a combination thereof.

22. The abrasive article of claim 20 wherein the abrasive grain particles are orientated.

23. Use of an abrasive article of any of claims 20 to 22 in a method of repair of a painted surface comprising:
providing a painted surface having a surface defect; and
removing the surface defect by abrading with the abrasive article.

24. The method of claim 1 wherein the hydrophobic surface treatment comprises a substituted or unsubstituted hydrocarbon group having at least 6 carbon atoms.

25. The abrasive grain of claim 12 wherein the hydrophobic surface treatment comprises a substituted or unsubstituted hydrocarbon group having at least 6 carbon atoms.

26. The abrasive grain of claim 12 wherein the abrasive grain is a free-flowing dry powder of the abrasive particles and discrete hydrophobic nanoparticles.