WHAT IS CLAIMED IS:

1. A process for producing treated filler comprising:

(a) treating a slurry comprising untreated filler wherein said untreated filler has not been previously dried, with a treating composition comprising a treating agent, thereby forming a treated filler slurry; and

(b) drying said treated filler slurry to produce treated filler,

wherein said treating agent comprises at least one of:

(i) a derivative of an unsaturated fatty acid comprising a linear or branched, optionally substituted C_4 to C_{38} alkyl having at least one carbon-carbon double bond, wherein at least one carbon-carbon double bond is reacted to include at least one functional group; and/or

(ii) a salt of an unsaturated fatty acid comprising a linear or branched, optionally substituted C_4 to C_{38} alkyl having at least one carbon-carbon double bond,

wherein said unsaturated fatty acid of said derivative (i), and said unsaturated fatty acid of said salt (ii) are in each case the same or different; and

wherein said untreated filler is chosen from a metal silicate, silica gel, colloidal silica, precipitated silica, and mixtures thereof.

2. The process of claim 1, wherein said metal silicate is chosen from aluminum silicate, lithium silicate, sodium silicate, and/or potassium silicate.

3. The process of either of claims 1 or 2, wherein the filler comprises precipitated silica.

4. A process for producing treated precipitated silica comprising:

(a) combining an alkali metal silicate and an acid to form a slurry comprising untreated silica, wherein said untreated silica has not been previously dried;

(b) treating said slurry with a treating composition comprising a treating agent, thereby forming a treated slurry; and

(c) drying said treated slurry to produce a treated precipitated silica,

wherein said treating agent comprises at least one of:

(i) an unsaturated fatty acid comprising a linear or branched, optionally substituted C_4 to C_{38} alkyl l having at least one carbon-carbon double bond;

(ii) a derivative of said unsaturated fatty acid of (i), wherein at least one carbon-carbon double bond is reacted to include at least one functional group; and/or

(iii) a salt of said unsaturated fatty acid of (i),

wherein said unsaturated fatty acid (i), said unsaturated fatty acid of said derivative (ii), and said unsaturated fatty acid of said salt (iii) are in each case the same or different.

5. The process of claim 4, wherein said alkali metal silicate comprises aluminum silicate, lithium silicate, sodium silicate, and/or potassium silicate.

6. A process for producing treated precipitated silica comprising:

(a) combining an alkali metal silicate and an acid to form an untreated slurry comprising untreated silica, wherein said untreated silica has not been previously dried;

(b) drying the untreated slurry to produce dried precipitated silica;

(c) forming an aqueous slurry of the dried precipitated silica with a treating composition comprising a treating agent, and, optionally, a coupling agent and/or, optionally, a non-coupling agent to form a treated precipitated silica slurry; and

(d) drying the treated precipitated silica slurry to produce a dried treated precipitated silica,

wherein said treating agent comprises at least one of:

(i) an unsaturated fatty acid comprising a linear or branched, optionally substituted C_4 to C_{38} alkyl having at least one carbon-carbon double bond;

(ii) a derivative of said unsaturated fatty acid of (i), wherein at least one carbon-carbon double bond is reacted to include at least one functional group; and/or

(iii) a salt of said unsaturated fatty acid of (i),

wherein said unsaturated fatty acid (i), said unsaturated fatty acid of said derivative (ii), and said unsaturated fatty acid of said salt (iii) are in each case the same or different.

7. The process of any one of claims 1 to 6, wherein the unsaturated fatty acid, derivative thereof, and/or salt thereof each independently comprise a linear or branched, optionally substituted C_{10}-C_{18} alkyl.

8. The process of any one of claims 1 to 7, wherein said unsaturated fatty acid, said unsaturated fatty acid of said derivative, and/or said unsaturated fatty acid of said salt are each independently selected from the group consisting of undecylenic acid, α-linolenic acid, arachidonic acid, docosahexaenoic acid, eicosapentaenoic acid, elaidic acid, erucic acid, linoleic acid, conjugated linoleic acid, linoelaidic acid, sapienic acid, vaccenic acid, myristoleic acid, palmitoleic acid, oleic acid, gadoleic acid, erucic acid, nervonic acid, and combinations thereof.

9. The process of any one of claims 1 to 8, wherein the unsaturated fatty acid is at least one of oleic acid and undecylenic acid.

10. The process of any one of claims 1 to 9, wherein each functional group of said derivative is independently selected from ketone, thiol, sulfido, halo, amino, alkenyl, alkynyl, hydroxyl, anhydride, and oxirane.

11. The process of any one of claims 1 to 10, wherein said salt comprises a cation selected from alkali metal cations, alkaline earth metal cations, transition metal cations, ammonia, and quaternary ammonium cations.

12. The process of any one of claims 1 to 11, wherein the treating composition further comprises an organosilane coupling agent represented by the following the following Formula (I):

$$(R_1)_a(R_2)_bSiX_{4-a-b} \quad (I),$$

wherein each R_1 is independently a hydrocarbyl group comprising 1 to 36 carbon atoms and a functional group, wherein the functional group of the hydrocarbyl group

is vinyl, allyl, hexenyl, epoxy, glycidoxy, (meth)acryloxy, sulfide, isocyanato, polysulfide, mercapto, or halogen; each R_2 is independently a hydrocarbyl group having from 1 to 36 carbon atoms or hydrogen, X is independently halogen or alkoxy having 1 to 36 carbon atoms; a is 0, 1, 2, or 3; b is 0, 1, or 2; (a+b) is 1, 2, or 3; provided that when b is 1, (a+b) is 2 or 3.

13. The process of claim 12, wherein the treating composition further comprises an organosilane different from the organosilane represented by Formula (I).

14. The process of any one of claims 1 to 13, wherein the treating composition further comprises a coupling agent comprising an organosilane selected from the group consisting of (4-chloromethyl-phenyl) trimethoxysilane, (4-chloromethyl-phenyl) triethoxysilane, [2-(4-chloromethyl-phenyl)-ethyl] trimethoxysilane, [2-(4-chloromethyl-phenyl)-ethyl] triethoxysilane, (3-chloro-propenyl)-trimethoxysilane, (3-chloro-propenyl)-triethoxysilane, (3-chloro-propyl)-triethoxysilane, (3-chloro-propyl)-trimethoxysilane, trimethoxy-(2-p-tolyl-ethyl)silane and triethoxy-(2-p-tolyl-ethyl)silane, and combinations thereof.

15. The process of any one of claims 1 to 14, wherein the treatment composition further comprises a non-coupling agent and wherein the non-coupling agent is one or more of a biopolymer, fatty acid, organic acid, polymer emulsion, polymer coating composition, and combinations thereof, and wherein the non-coupling agent differs from the treating agent.

16. The process of any one of claims 1 to 15, wherein the treatment composition further comprises a non-coupling agent selected from an anionic surfactant, a nonionic surfactant, an amphoteric surfactant, and combinations thereof, present in an amount of from greater than 1% to 25% by weight based on the weight of untreated filler.

17. A treated filler produced by the process of any one of claims 1 to 3 or 7 or 16.

18. A treated precipitated silica prepared by the process of any one of claims 3 to 16.

19. A rubber composition comprising:

(i) the treated filler produced by the process of any one of claims 1 to 3 or 7 to 17;

(ii) the treated filler produced by a process comprising:

(a) treating a slurry comprising untreated filler wherein said untreated filler has not been previously dried, with a treating composition comprising a treating agent, thereby forming a treated filler slurry; and

(b) drying said treated filler slurry to produce treated filler,

wherein said treating agent comprises at least one of:

(A) an unsaturated fatty acid comprising a linear or branched, optionally substituted C_4 to C_{38} alkyl l having at least one carbon-carbon double bond;

(B) a derivative of said unsaturated fatty acid of (i), wherein at least one carbon-carbon double bond is reacted to include at least one functional group; and/or

(C) a salt of said unsaturated fatty acid of (i),

wherein said unsaturated fatty acid (A), said unsaturated fatty acid of said derivative (B), and said unsaturated fatty acid of said salt (C) are in each case the same or different; and

wherein said untreated filler is chosen from a metal silicate, silica gel, colloidal silica, precipitated silica, and mixtures thereof; or

(iii) the treated precipitated silica produced by the process of any one of claims 3 to 16 or 18.

20. The rubber composition of claim 19, wherein the rubber composition either (i) comprises natural rubber or (ii) is a rubber compounding masterbatch.