COSMETIC COMPOSITION COMPRISING HYDROPHILIC ORGANOSILANES

Applicant: Dow Corning Corporation, Midland, MI (US)

Inventors: MICHAEL SALVATORE FERRITTO, MIDLAND, MI (US); LENIN JAMES PETROFF, BAY CITY, MI (US)

Assignee: DOW CORNING CORPORATION, MIDLAND, MI (US)

Filed: Oct. 31, 2013

Provisional application No. 61/721,688, filed on Nov. 2, 2012.

ABSTRACT

The present disclosure relates to cosmetic compositions comprising an organosilane (A) having the formula:

$$(R^1)_n(R^2O)_{3-n}SR^3O(CH_2CH_2O)_n(C_2H_5O)_bR^4$$

where

- $n$ is 1, 2, or 3;
- $a$, $b$ may vary from 0 to 30, with the proviso $a+b$;
- $R^1$ is a hydrocarbon group containing 1 to 12 carbon atoms;
- $R^2$ is hydrogen or an alkyl group containing 1 to 6 carbon atoms;
- $R^3$ is a divalent hydrocarbon group containing 2 to 12 carbon atoms;
- $R^4$ is hydrogen, $R^1$, or an acetyl group;

and a cosmetic ingredient (B), and optionally in a cosmetically acceptable medium.
COSMETIC COMPOSITION COMPRISING HYDROPHILIC ORGANO SILANES

CROSS REFERENCE TO RELATED APPLICATIONS


TECHNICAL FIELD

[0002] This disclosure relates to cosmetic compositions comprising an organosilane (A) containing a polyo xyalkylene moiety, and at least one cosmetic ingredient (B), in a cosmetically acceptable medium.

BACKGROUND OF THE INVENTION

[0003] Organosilanes have been used in cosmetic applications to provide for various benefits, such as hydration, hair conditioning, foam boosting, humectant.

[0004] Organosilanes may be used to treat pigments or filler surfaces for compatibility, dispersibility, wettability. Organosilanes may also be used as surface active ingredient to form emulsions, such as water-in-oil or oil-in-water emulsions.

[0005] Skin hydration is a critical parameter in delaying the signs of skin ageing. Therefore, appropriate actives are included in cosmetic and dermatological compositions, aimed at compensating for dehydration of skin by increasing the water content in the upper layers of the skin. Various mechanisms exist such as increasing the amount of water in the upper layers of the skin with actives such as polysols and specifically glycerin, glycols, and sugars; or preventing water from evaporating by forming a so-called barrier, usually in the form of a hydro-lipidic film.

[0006] Polysils have the major drawback of being tacky at some higher levels, and only provide hydration for a period not longer than a day.

[0007] Barrier ingredients such as petrolatum have only a delayed effect, where hydration retention starts only after several hours.

[0008] There is an ongoing need for actives which provide for immediate and longer lasting hydration to the skin, and which do not negatively impact the sensory profile of the cosmetic or dermatological product.

BRIEF SUMMARY

[0009] The present invention relates to cosmetic compositions comprising organosilanes containing a polyoxyalkylene moiety. In particular, the present disclosure relates to cosmetic compositions comprising an organosilane (A) having the formula:

\[(R')_{a-b}(R^2O)_aSiR^3O(CH_2)_{b}(C_3H_7O)_{a-b}R^4\]

where

[0010] \(n\) is 1, 2, or 3,

[0011] \(a+b\) may vary from 0 to 30, with the proviso \(aab\),

[0012] \(R^1\) is a hydrocarbon group containing 1 to 12 carbon atoms,

[0013] \(R^2\) is hydrogen or an alkyl group containing 1 to 6 carbon atoms,

[0014] \(R^3\) is hydrogen, an acetyl group, and at least one cosmetic ingredient (B).

DETAILED DESCRIPTION

[0017] The present invention relates to compositions comprising an organosilane (A), or reaction products therefrom, having the formula:

\[(R')_{a-b}(R^2O)_aSiR^3O(CH_2)_{b}(C_3H_7O)_{a-b}R^4\]

where

[0018] \(n\) is 1, 2, or 3, alternatively \(n\) is 2, \(a+b\) may vary from 0 to 30, with the proviso \(aab\),

[0019] \(R^2\) is a hydrocarbon group containing 1 to 12 carbon atoms, alternatively \(R^1\) is an alkyl group or a phenyl group, alternatively \(R^1\) is methyl,

[0020] \(R^2\) is hydrogen or an alkyl group contain 1 to 6 carbon atoms, alternatively \(R^2\) is methyl or ethyl, alternatively \(R^2\) is ethyl,

[0021] \(R^3\) is a divalent hydrocarbon group containing 2 to 12 carbon atoms, alternatively \(R^3\) contains 2 to 6 carbon atoms, alternatively \(R^3\) is propylene, or isobutylene, alternatively \(R^3\) is \(-CH_2CH(CH_3)\)_, alternatively \(R^3\) is propylene,

[0022] \(R^4\) is hydrogen, \(R^1\), or an acetyl group, alternatively \(R^4\) is methyl;

and at least one cosmetic ingredient (B), in a cosmetically acceptable medium.

[0023] Organosilanes (A) contains a polyoxy alkylene moiety which is predominantly a polystyrene chain as designated by \((CH_2CH_2O)_n\), in the above formula. The polystyrene group comprises predominately polyethylene units \((C_3H_7O)_n\), but may also contain oxpropylene units \((C_3H_7O)_n\), oxbutylene units \((C_4H_7O)_n\), or mixtures thereof. When the polystyrene group comprises a mixture of \((C_3H_7O)_n\), \((C_4H_7O)_n\), and/or \((C_4H_7O)_n\) units, the oxalkylene groups are typically randomized with the group but can also be blocked. Typically, the polystyrene group comprises a majority of polystyrene units, as defined on a molar basis and indicated in the above formula by the "n" subscript.

[0024] The subscript "a" is equal to or greater than 1,

[0025] alternatively \(a\) may vary from 4 to 30,

[0026] alternatively \(a\) may vary from 4 to 20,

[0027] alternatively \(a\) may vary from 4 to 10,

[0028] alternatively \(a\) may vary from 5 to 8,

[0029] alternatively \(a\) is 7.

[0030] The subscript "b" varies from 0 to 30,

[0031] alternatively \(b\) may vary from 1 to 30,

[0032] alternatively \(b\) may vary from 1 to 20,

[0033] alternatively \(b\) may vary from 10 to 20,

[0034] alternatively \(b\) may vary from 15 to 20,

[0035] with the proviso that \(aab\).

[0036] In one embodiment, the organosilane (A) has the following average formula:

\[(CH_3)_2CH_2O)Si(CH_2)_{12}O(CH_2)_{12}OCH_2CH_2O)_{12}CH_3\]

[0037] In one embodiment, the organosilane (A) has the following average formula:

\[(CH_3)_2CH_2O)Si(CH_2)_{12}O(CH_2)_{12}OCH_2CH_2O)_{12}C_3H_7\]

[0038] The organosilanes (A) may be prepared by any method known in the art for preparing organosilanes, or alternatively the organosilanes (A) may be prepared by the process as discussed below.
The organosilane (A) may be prepared by a process comprising reactivating:

a) an organosilane of the formula \((R'^3)_n(R'^4)\) _n\n
where \(R'^3\) is a hydrocarbon group containing 1 to 12 carbon atoms,

\[ \text{SiH} \]

b) a polyoxyalkylene of the formula \((R'^5)_{n} \) \n
\[ \text{SiH} \]

where the subscript “a” is equal to or greater than 1,

\[ \text{SiH} \]

the subscript “b” varies from 0 to 30.

\[ \text{SiH} \]

with the proviso that \(a+b\) is not 0.

\[ \text{SiH} \]

where \(R'^4\) is hydrogen, \(R'^5\), or an acetyl group,

\[ \text{SiH} \]

representative examples of organosilanes suitable as component a) in the present process include:

\[ \text{SiH} \]

Component a) is an organosilane of the formula \((R'^3)_n(SiH)\). Alternatively, it is possible for two or more \(R'^3\) groups to be present on the Si atom, in which case \(R'^3\) would be zero. In cases such as this, two polyether groups would subsequently be grafted onto the Si atom. Representative examples of organosilanes suitable as component b) in the present process include:

\[ \text{SiH} \]

The polyoxyalkylene useful as component b) can be any polyoxyalkylene that is terminated at one molecular chain end with an unsaturated aliphatic hydrocarbon group containing 2 to 12 carbon atoms. The polyoxyalkylene may result from the polymerization of ethylene oxide, propylene oxide, butylene oxide, 1,2-epoxyhexane, 1,2-epoxyoctane, cyclic epoxides such as cyclohexene oxide or exo-2,3-epoxyboronane. The polyoxyalkylene group comprises predominately oxyethylene units \((C_2H_4O)\), but may also contain minor amounts of oxypropylene units \((C_3H_6O)\), oxybutylene units \((C_4H_8O)\), or mixtures thereof. Typically, the polyoxyalkylene group comprises a majority of oxyethylene units, as defined on a molar basis and indicated in the above formula by the “a” subscript. When present, the oxypropylene units are indicated in the above formula by the “b” subscript. The unsaturated aliphatic hydrocarbon group can be an alkyl or alkenyl group. Representative, non-limiting examples of the alkyl groups are shown by the following structures:

\[ \text{SiH} \]


[0057] The unsaturated aliphatic hydrocarbon group at one molecular terminal are known in the art, and many are commercially available. Representative, non-limiting examples of polyoxyalkylenes having an unsaturated aliphatic hydrocarbon at one molecular terminal include:

\[ \text{SiH} \]

The amounts of components a) and b) used in the hydrosilylation reaction may vary. The molar ratio of the SiH units of component a) to the aliphatic unsaturated groups of component b) may range from 1 to 10, alternatively from 5 to 1/5, or alternatively from 1/1 to 1/2. Typically, the amounts of components a) and b) are selected to provide molar excess of the unsaturated groups of component b) to the SiH groups in component a).

Component c) is a hydrosilylation catalyst. The hydrosilylation catalyst may be any suitable Group VIII metal based catalyst selected from a platinum, rhodium, iridium, palladium or ruthenium. Group VIII metal group containing catalysts useful to catalyze curing of the present compositions can be any of those known to catalyze reactions of silicon bonded hydrogen atoms with silicon bonded unsaturated hydrocarbon groups. The preferred Group VIII metal for use as a catalyst to effect cure of the present compositions by hydrosilylation is a platinum based catalyst. Some preferred platinum based hydrosilylation catalysts for curing the present composition are platinum metal, platinum compounds and platinum complexes.

Suitable platinum catalysts are described in U.S. Pat. No. 2,823,218 (commonly referred to as “Sperie’s catalyst”) and U.S. Pat. No. 3,923,705. The platinum catalyst may be “Karstedt’s catalyst”, which is described in Karstedt’s U.S. Pat. Nos. 3,715,334 and 3,814,730. Karstedt’s catalyst is a platinum divinyl tetramethyl disiloxane complex typically containing about one-weight percent of platinum in a solvent such as toluene. Alternatively the platinum catalyst may be a reaction product of chlorophosphatic acid and an organosilicon compound containing terminal aliphatic unsaturation, as described in U.S. Pat. No. 3,419,593. Alternatively, the hydrosilylation catalyst is a neutralized complex of platinum chloride and divinyl tetramethyl disiloxane, as described in U.S. Pat. No. 5,175,325.

Further suitable hydrosilylation catalysts are described in, for example, U.S. Pat. Nos. 3,195,601; 3,220,972; 3,296,291; 3,516,946; 3,989,668; 4,784,879; 5,036,117; and 5,175,325 and EP 0 347 895 B1.

The hydrosilylation catalyst may be added in an amount equivalent to as little as 0.001 part by weight of elemental platinum group metal, per one million parts (ppm) of the total reaction composition. Typically, the concentration
of the hydrosilylation catalyst in the reaction composition is that capable of providing the equivalent of at least 1 part per million of elemental platinum group metal. A catalyst concentration providing the equivalent of 1 to 500, alternatively 50 to 500, alternatively 50 to 200 parts per million of elemental platinum group metal may be used.

[0077] The reaction effected in the present process is a hydrosilylation reaction, wherein the SiH units of component a) react with the unsaturated aliphatic hydrocarbon group of component b) form an Si—C bond. The reaction may be conducted under those conditions known in the art for effecting hydrosilylation reactions.

[0078] The hydrosilylation reaction can be conducted neat or in the presence of a solvent. The solvent can be an alcohol such as methanol, ethanol, isopropanol, butanol, or n-propanol, a ketone such as acetone, methyl ethyl ketone, or methyl isobutyl ketone; an aromatic hydrocarbon such as benzene, toluene, or xylene; or an aliphatic hydrocarbon such as heptane, hexane, or octane; a glycol ether such as propylene glycol methyl ether, dipropylene glycol methyl ether, propylene glycol n-butyl ether, propylene glycol n-propyl ether, or ethylene glycol n-butyl ether, a halogenated hydrocarbon such as dichloromethane, 1,1,1-trichloroethane or methylene chloride, chloroform, dimethyl sulfoxide, dimethyl formamide, acetonitrile, tetrahydrofuran, white spirits, mineral spirits, or naphtha.

[0079] The amount of solvent can be up to 70 weight percent, but is typically from 20 to 50 weight percent, said weight percent being based on the total weight of components in the hydrosilylation reaction. The solvent used during the hydrosilylation reaction can be subsequently removed from the resulting organosilane by various known methods.

[0080] The organosilane (A) contains at least one alkoxy group, as represented by (R'O) in the formula above. As such, organosilanes (A) may hydrolyze in aqueous medium, and may further condense with itself or with other alkoxy silane or halide functional silanes, to form oligomeric or higher molecular weight polymeric siloxanes.

[0081] Thus, the present disclosure relates to the reaction products resulting from the hydrolysis and/or condensation of the aforementioned organosilanes. The organosilanes (A), or subsequently produced oligomeric or polymeric siloxanes derived from the organosilanes, may react with hydroxyl functional compounds, or surfaces or substrates such as pigments or fillers. Since the organosilanes (A) contain a polyalkylene oxide chain that is predominately ethylen oxide, the present organosilanes may be considered as "hydrophobic".

[0082] Organosilanes (A) may be used to treat various substrates to impart greater "hydrophilicity" to the substrates. Furthermore, the reactivity of the silane moiety may allow the present compositions to bond to various substrates to provide a longer lasting, more durable hydrophilic treatment.

[0083] The organosilane (A) may be used neat, or as an aqueous solution, as a solution in an organic solvent. When used as a solution, additional components such as acids or bases to buffer the pH may be added to the solution which are known to enhance the hydrolysis and condensation of alkoxysilanes.

[0084] Cosmetic compositions include those compositions which are intended to be placed in contact with the external parts of the human body (skin, epidermis), hair system, nails, etc.) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance, protecting them, keeping them in good condition or correcting body odors. In some instances, cosmetic compositions may also include health care compositions.

[0085] The organosilane (A), or reaction products derived therefrom, is present in the cosmetic composition in conjunction with a cosmetic ingredient (B), optionally in a cosmetically acceptable medium.

[0086] Cosmetic ingredients are those ingredients known to be used in cosmetic application. A wide review of such ingredients may be found in the CTFA cosmetic ingredient handbook.

[0087] Cosmetically acceptable medium include water, solvents, diluents, or mixtures and emulsions thereof.

[0088] Cosmetic applications include skin care, hair care, or nail care applications.

[0089] Cosmetic ingredients include emollients, waxes, moisturizers, surface active materials such as surfactants or detergents or emulsifiers, thickeners, water phase stabilizing agents, pH controlling agents, preservatives and cosmetic biocides, sebum absorbants or sebum control agents, vegetable or botanical extracts, vitamins, proteins or amino-acids and their derivatives, pigments, colorants, fillers, silicone conditioning agents, cationic conditioning agents, UV absorbers, sunscreen agents, antinflammatory agents, antiperspirant agents, antiperspirant agents, deodorant agents, skin protectants, hair dyes, nail care ingredients, fragrances or perfume, antioxidants, oxidizing agents, reducing agents, propellant gases, and mixtures thereof.

[0089] Additional ingredients that may be used in the cosmetic compositions include fatty alcohols, colour care additives, anticellulites, pearlising agents, chelating agents, film formers, styling agents, ceramics, suspending agents and others.

[0091] Health care ingredients include antiacne agents, antibacterial agents, antifungal agents, therapeutic active agents, external analgesics, skin bleaching agents, anti-cancer agents, diuretics, agents for treating gastric and duodenal ulcers, proteolytic enzymes, antihistamine or H1 histamine blockers, sedatives, bronchodilators, diluents.

[0092] Additional ingredients that may be used in the health care compositions include antibiotic, antiseptic, anti-bacterial, antiinflammatory, astringents, hormones, smoking cessation compositions, cardiovascular, antihypertensive, alpha-1 blocker, beta blocker, ACE inhibitor, antiaggregant, non-steroidal anti-inflammatory agents such as diclofenac, antispasmodic agents such as clobetasol propionate, antidermatitis agents, tranquilizer, anticonvulsant, anticoagulant agents, healing factors, cell growth nutrients, peptides, corticosteroid drugs, antipruritic agents and others.

[0093] Cosmetic ingredients may be used in health care compositions, such as waxes, and others; and health care ingredients may be used in cosmetic compositions such as anti-acne agents, and others.

[0094] Examples of emollients include volatile or nonvolatile silicone oils; silicone resins such as polypropylene-sesquioxane and phenyl trimethicone; silicone elastomers such as dimethicone crosspolymer; alkylmethyldimethoxilanes such as C30-45 Alkyl Methicone; volatile or non-volatile hydrocarbon compounds, such as squalene, paraffin oils, petrolatum oils and naphthenale oils; hydrogenated or partially hydrogenated polyisobutene; isoicoses; squalane; isoparaffin; isodecane; isodecane or isohexa-decane; branched C8-C16 esters; isohexyl neopentanoate; ester oils such as isononyl isononanoate; cetostearyl octanoate, isopropyl
myristate, palmitate derivatives, stearates derivatives, iso- 
tearyl isostearate and the heptanoates, octanoates, decanoates or 
ricinoleates of alcohols or of polyalcohols, or mixtures thereof; 
hydrocarbon oils of plant origin, such as wheatgerm, 
sunflower, grapeseed, castor, shea, avocado, olive, soybean, 
sweet almond, palm, rapeseed, cotton seed, hazelnut, macadam-
ia, jojoba, blackcurrant, evening primrose; or triglycerides of 
caprylic/capric acids; higher fatty acids, such as oleic acid, 
linoleic acid or linolenic acid, and mixtures thereof.

[0095] Example of waxes include hydrocarbon waxes such as 
beeswax, lanolin wax, rice wax, carnauba wax, candelilla wax, 
microcrystalline waxes, paraffins, ozokerite, polyethylene 
waxes, synthetic wax, ceresin, lanolin, lanolin derivatives, 
cocoa butter, shellac wax, bran wax, cakop wax, sugar 
cane wax, montan wax, whale wax, buyberry wax, silicone 
waxes (e.g. polydimethylsiloxane alkyls, allyls, and or esters, 
C50-245 allyl dimethylsiloxyl polypropylsiloxane), and mixtures thereof.

[0096] Examples of moisturizers include lower molecular 
weight aliphatic diols such as propylene glycol and butylene 
glycol; polyols such as glycerine and sorbitol; and propylene 
ethylene polymers such as polyethylene glycol 200; hyalu-
ronic acid and its derivatives, and mixtures thereof.

[0097] Examples of surface active materials may be 
anionic, cationic or non ionic, and include organomodified 
silicones such as dimethicone copolyol; oxyethylated and/or 
propylene block copolymers of glycerol; oxyethylated and/or 
propylene block copolymers of fatty alcohol such as ceteth-30, 
C12-15 paraffin-7; fatty acid esters of polyethylene glycol such 
as PEG-50 stearate, PEG-40 monostearate; saccharides and 
esters, such as sucrose stearate, sucrose cocoate and sorbitan 
stearate, and mixtures thereof; phosphoric esters and salts 
thereof, such as DEA oleth-10 phosphate; sulphosuccinu-
lates such as disodium PEG-5 citrate lauryl sulphosuccinate 
and disodium ricinoleamido MEA sulphosuccinate; alkyl 
ether sulphates, such as sodium laurel ether sulphate; 
isethionates; betaine derivatives; and mixtures thereof.

[0098] Further examples of nonionic surfactants include 
propoxylated amyl alkyl ethers, propoxylated amyl alkylphenol 
ethers, polyoxyethylene lauryl ethers, propoxylated 
sorbitan monolates, propoxylated alkyl esters, propoxylated 
sorbitan alkyl esters, polyethylene glycol, propyroyl-
propylene glycol, diethylene glycol, ethoxylated 
trimethyloanons, polyoxyalkylene-substituted siloxanes 
(like or AlBn types), silicone alkylamid si, silicone esters, 
silicone glycodies, and mixtures thereof.

[0099] Examples of thickeners include acrylamide copoly-
mers, acrylates copolymers and salts thereof (such as sodium 
polyacrylate), xanthan gum and derivatives, cellulose gum 
and cellulose derivatives (such as methylcellulose, methyl-
hydroxypropylcellulose, hydroxypropylcellulose, propylpoly-
hydroxyethylcellulose), starch and starch derivatives (such 
as hydroxyethylamyllose and starch amylose), poloxomers, 
carborer, sodium alginate, arabic gum, cassia gum, guar gum 
and guar gum derivatives, cocomide derivatives, alkyl alco-
hol, gelatin, PEG-derivatives, saccharides (such as fructose, 
glucose) and saccharides derivatives (such as PEG-120 
metal and glucose diolate), and mixtures thereof.

[0100] Examples of water phase stabilizing agents include 
electrolytes (e.g. alkali metal salts and alkaline earth salts, 
especially the chloride, borate, citrate, and sulfate salts of 
sodium, potassium, calcium and magnesium, as well as alu-
mium chlorohydrate, and polyelectrolytes, especially hyalu-
ronic acid and sodium hyaluronate), polyols (glycerine, 
propylene glycol, butylene glycol, and sorbitol), alcohols 
such as ethyl alcohol, and hydrocolloids, and mixtures thereof.

[0101] Examples of pH controlling agents include any 
water soluble acid such as a carboxylic acid or a mineral acid 
such as hydrochloric acid, sulphuric acid, and phosphoric 
acid, monocarboxylic acid such as acetic acid and lactic acid, 
and polycarboxylic acids such as succinic acid, adipic acid, 
citric acid, and mixtures thereof.

[0102] Examples of preservatives and cosmetic biocides 
include paraben derivatives, hydantoin derivatives, chlo-
rohexidine and its derivatives, imidazolidinyl urea, phenoxy-
ethanol, silver derivatives, salicylate derivatives, triclosan, 
ciclopinox olamine, hexamidine, oxyquinoline and its deri-
atives, PVP-iodine, zinc salts and derivatives such as zinc 
pyrithione, and mixtures thereof.

[0103] Examples of sebum absorbents or sebum control 
agents include silica silylate, silica dimethyl silylate, dime-
thicone/vinyl dimethicone copolymer, polymethyl meth-
acyrilot, cross-linked methymethacrylate, aluminum starch 
octenylsuccinate, and mixtures thereof.

[0104] Examples of vegetable or botanical extracts are 
derived from plants (herbs, roots, flowers, fruits, or seeds) in 
oil or water soluble form, such as coconut, green tea, white 
tea, black tea, horsetail, ginkgo biloba, sunflower, wheat 
germ, seaweed, olive, grape, pomegranate, aloe, apricot 
kern, apricot, carrot, tomato, tobacco, bean, potato, artzuki 
bean, catechu, orange, cucumber, avocado, watermelon, 
banana, lemon or palm. Examples of herbal extracts include 
dill, horseradish, oats, neem, beet, broccoli, tea, pumpkin, 
soybean, barley, walnut, flax, ginseng, poppy, avocado, pea, 
sesame, and mixtures thereof.

[0105] Examples of vitamins include a variety of different 
organic compounds such as vitamins, acids, sterols, and 
quinones. They may be classified into two solubility groups: 
lipid-soluble vitamins and water soluble vitamins. Lipid-
soluble vitamins that have utility in personal care formu-
lations include retinol (vitamin A), ergocalciferol (vitamin D2), 
cholecalciferol (vitamin D3), thymonadione (vitamin K1), 
and tocopherol (vitamin E). Water-soluble vitamins that have 
utility in personal care formulations include ascorbic acid 
(vitamin C), thiamin (vitamin B1) niacin (nicotinic acid), 
niacinamide (vitamin B3), riboflavin (vitamin B2), panto-
thenic acid (vitamin B5), biotin, folie acid, pyridoxine (vi-
tamin B6), and cyanocobalamn (vitamin B12). Additional 
elements of vitamins include derivatives of vitamins such as 
retinyl palmitate (vitamin A palmitate), retinyl acetate (vit-
amin A acetate), retinyl linoleate (vitamin A linoleate), and 
retinyl propionate (vitamin A propionate), tocopherol acetate 
(vitamin E acetate), tocopherol linoleate (vitamin E lin-
oleate), tocopherol succinate (vitamin E succinate), toco-
opherol-5, tocopherol-10, tocopherol-18, tocopherol-50 (ethoxy-
ated vitamin E derivatives), PPG-2 tocoherol-5, PPG-5 tocho-
pherol-2, PPG-10 tocoherol-30, PPG-20 tocoherol-50, PPG-30 tocoherol-70, PPG-70 tocoherol-100 (propoxylated and ethoxylated vitamin E derivatives), sodium tocoherol phosphate, ascorbyl palmitate, ascorbyl dipalmitate, ascorbyl glucoside, ascorbyl tetra-
rinositopalmilate, tetrahexadecyl ascorbate, ascorbyl tocopherol 
malate, potassium ascorbyl tocoherol phosphate, tocopherol 
icotinate, and mixtures thereof.

[0106] Examples of proteins or amino-acids and their 
derivatives include those extracted from wheat, soy, rice, 
corn, keratin, elastin or silk. Proteins may be in the hydro-

alyzed form and they may also be quarternized, such as hydrolyzed elastin, hydrolyzed wheat powder, hydrolyzed silk. Examples of protein include enzymes such as hydrodrolases, cutinases, oxidases, transferases, reductases, hemicellulases, esterases, isomerases, pectinases, lactases, peroxidases, lactases, catalases, and mixtures thereof. Examples of hydrodrolases include proteases (bacterial, fungal, acid, neutral or alkaline), amylases (alpha or beta), lipases, mannanases, cellulases, collagenases, ligozymes, superoxide dismutase, catalase, and mixtures thereof.

0107] Examples of pigments and colorants include surface treated or untreated iron oxides, surface treated or untreated mica, silver oxide, silicates, chromium oxides, carbon black, ultramarines, chlorophyllin derivatives and yellow ochre. Examples of organic pigments include aromatic types including azo, indigo, triphenylmethane, anthraquinone, and xanthine dyes which are designated as D&C and FD&C blues, browns, greens, oranges, reds, yellows, etc., and mixtures thereof.

0108] Examples of fillers include talc, micas, kaolin, zinc or titanium oxides, calcium or magnesium carbonates, silica, silica silylate, titanium dioxide, glass or ceramic beads, poly-methylmethacrylate beads, boron nitride, aluminium silicate, aluminium starch octenylsuccinate, bentonite, magnesium aluminium silicate, nylon, silk powder metal soaps derived from carboxylic acids having 8-22 carbon atoms, non-expanded synthetic polymer powders, expanded powders and powders from natural organic compounds, such as cereal starches, which may or may not be crosslinked, copolymer microspheres, polytrap, silicone resin microbeads, and mixtures thereof. The fillers may be surface treated to modify affinity or compatibility with remaining ingredients.

0109] Examples of silicone conditioning agents include silicone oils such as dimethicone; silicone gums such as dimethiconol; silicone resins such as trimethylsioxilane, polypropyl silsesquioxane; silicone elastomers; alkylmethylsiloxanes; organomodified silicone oils, such as amodimethicone, aminopropyl phenyl trimethicone, phenyl trimethicone, trimethyl pentaphenyl trisiloxane, silicone quaternium-16; squalane; dimethicone; silicone crosspolymer, silicone quaternium-16; saccharide functional siloxanes; carbonyl functional siloxanes; silicone polyethers; siloxane copolymers (divinylidimethicone/dimethylcopolymer); acrylate or acrylic functional siloxanes; and mixtures or emulsions thereof.

0110] Examples of cationic conditioning agents include guar derivatives, quaternary nitrogen derivatives of cellulose ethers; homopolymers of dimethyl diallylammonium chloride; copolymers of acrylamide and dimethyl diallylammonium chloride; homopolymers or copolymers derived from acrylic acid or methacrylic acid which contain cationic nitrogen functional groups attached to the polymer by ester or amide linkages; polycondensation products of N,N-bis-(2,3-epoxypropyl)-piperazine or piperazine-bis-acrylamide and piperazine; and copolymers of vinylpyrrolidone and acrylic acid esters with quaternary nitrogen functionality. Specific materials include the various polyquats Polycationum-7, Polycationum-8, Polycationum-10, Polycationum-11, and Polycationum-23. Other categories of conditioners include cationic surfactants such as cetyl trimethylammonium chloride, cetyl trimethylammonium bromide, stearyltimethylammonium chloride, and mixtures thereof.

0111] UV absorbers and sunscreen agents include those which absorb ultraviolet light between about 290-320 nanometers (the UV-B region) and those which absorb ultraviolet light in the range of 320-400 nanometers (the UV-A region).

0112] Some examples of sunscreen agents are aminobenzoic acid, cinoxate, diethanolamine methoxyccinamate, digalloyl trioleate, dioxybenzone, ethyl 4-[bis(Hydroxypropyl)]aminobenzoate, glycercyl aminobenzoate, homosalate, lawsone with dihydroxacetone, menthyl anthranilate, octocrylene, ethyl hexyl methoxyccinamate, octyl salicylate, oxybenzone, padimate O, phenylbenzimidazole sulfonic acid, red petrotolium, sulisbenzone, titanium dioxide, trolamine salicylate, and mixtures thereof.

0113] Some examples of UV absorbers are acetaminosalol, allatoin PABA, benzalpbalide, benzophenone, benzophenone 1-12, 3-benzylidene camphor, benzylidene camphor hydrolyzed collagen sulfonamide, benzylidene camphor sulfonic acid, benzyl salicylate, bornelone, bumetizol, butyl Methoxydibenzoylmethane, butyl PABA, ceria-silica, ceria-silica tale, cincoxate, DEA-methoxyccinamate, dibenzozaxol napthalene, di-isolated hydroxylbenzylidene camphor, digalloyl trioleate, diisopropyl methyl cinnamate, dimethyl PABA ethyl cetearyldimonium tosylate, dioctyl butamido triazone, diphenyl carbamothoxy acetoxo napthopyran, disodium bisethylphenyl tiaminotriazine stilbene-disulfonate, disodium distyrylphényl triminotriazine stilbenedisulfonate, disodium distyrylbenzophenone, drometrizole, drometizole trifluoroxiane, ethyl dihydroxypropyl PABA, ethyl disopropylcinnamate, ethyl methoxyccinamate, ethyl PABA, ethyl urocinate, etosylcylene fènic acid, glyceryl octanoate dimethoxyccinamate, glyceryl PABA, glycol salicylate, homosalate, isoamyl p-methoxyccinamate, isopropylbenzyl salicylate, isopropyl dibenzoylmethane, isopropyl methoxyccinamate, menthyl anthranilate, menthyl salicylate, 4-methylbenzylidene, camphor, octocrylene, octrozole, octyl dimethyl PABA, ethyl hexyl methoxyccinamate, octyl salicylate, octyl triazine, PABA, PEG-25 PABA, pentyl dimethyl PABA, phenylbenzimidazole sulfonic acid, polycarylanlidemethyl benzylidine camphor, potassium methoxyccinamate, potassium phenylbenzyldiazole sulfonate, red petrotlum, sodium phenylbenzimidazole sulfonate, sodium urocinate, TEA-phenylbenzimidazole sulfonate, TEA-salicylate, terephthaldilidene dicamphor sulfonic acid, titanium dioxide, tri-PABA panthenol, urocanic acid, VA/crotonates/methacryloxybenzophenone-1 copolymer, and mixtures thereof.

0114] Examples of antidandruff agents include pyridineethione salts, selenium compounds such as selenium disulfide, and soluble antidandruff agents, and mixtures thereof.

0115] Examples of antiperspirant agents and deodorant agents include aluminium chloride, aluminium zirconium tetrachlorohydrate GLY, aluminium zirconium tetrachlorohydrate PEG, aluminium chlorohydrate, aluminium zirconium tetrachlorohydrate, aluminium chlorohydrate PEG, aluminium zirconium trichlorohydrate, aluminium chlorhydrant PEG, aluminium zirconium trichlorohydrate GLY, hexachlorophene, benzalkonium chloride, aluminium sesquichlorohydrate, sodium bicarbonate, aluminium sesquichlorohydrate PEG, chlorophyllina-copper complex, triclosan, aluminium zirconium octachlorohydrate, zinc ricinoleate, and mixtures thereof.
Examples of skin protectants are allantoin, aluminum acetate, aluminum hydroxide, aluminum sulfate, calamine, cocoa butter, cod liver oil, colloidal oatmeal, dimenthicone, glycera, kaolin, lanolin, mineral oil, petrolatum, shark liver oil, sodium bicarbonate, talc, witch hazel, zinc acetate, zinc carbonate, zinc oxide, and mixtures thereof.

Examples of hair dyes include 1-acetoxy-2-methyl-naphthalene; acid dyes; 5-amino-4-chloro-o-cresol; 5-amino-2,6-dimethoxy-3-hydroxypyridine; 3-amino-2,6-dimethylphenol; 2-amino-5-ethylphenol HCl; 5-amino-4-fluoro-2-methylphenol sulfate; 2-amino-4-hydroxyethylaminoanisole; 2-amino-4-hydroxyethylaminoanisole sulfate; 2-amino-5-nitrophenol; 4-amino-2-nitrophenol; 4-amino-3-nitrophenol; 2-amino-4-nitrophenol sulfate; m-aminoanilinophenol HCl; p-aminoanilinophenol HC1; m-anilinophenol; o-anilinophenol; 4,6-bis(2-hydroxyethoxy)-m-phenylenediamine HC1; 2,6-bis(2-hydroxyethoxy)-3,5-pyridinediamine HC1; 2-choloro-6-ethylanilino-4-nitrophenol; 2-chloro-5-nitro-N-hydroxyethyl p-phenylenediamine; 2-chloro-p-phenylenediamine; 3,4-diaminobenzene acid; 4,5-diamino-1-[(4-chlorophenyl)methyl]-1H-pyrazole-sulfate; 2,3-dimino-di(hydroxypropylozo) pyrazolone dimethasulfonate; 2,6-dimino-pyridine; 2,6-dimino-3-[[pyridin-3-ylazo]pyridine; dihydroxyindole; dihydroxyindoline; N,N-dimethyl-p-phenylenediamine; 2,6-dimethyl-p-phenylenediamine; N,N-dimethyl-p-phenylenediamine sulfmate; direct dyes; 4-ethoxy-m-phenylenediamine sulfmate; 3-ethylamino-p-cresol sulfate; N-ethyl-1,3-nitro PABA; gluconamidopropyl aminopropyl dimethicone; Hae-matoxylin; brassiletto wood extract; HCl dyes; Lawsonia inermis (Henna extract; 3-hydroxy-4,5-4-methilenedioxynilane HC1; hydroxethyl-2-nitro-p-toluidin; hydroxyethyl-p-phenylenediamine sulfmate; 2-hydroxyethyl pcriamic acid; hydroxypropyridine; hydroxyacuminidyl C21-22 isooxylic acidate; isatin; Isatis tinctoria leaf powder; 2-methoxyethyl-p-phenylenediamine sulfmate; 2-methoxy-p-phenylenediamine sulfmate; 6-methoxy-2,3-pyridinediamine HC1; 4-methylnbenzyl 4,5-diamino pyrazole sulfate; 2,2'-methylenebis 4-aminophenol; 2,2'-methylenebis-4-aminoanilinophenol HC1; 3,4-methylenedioxyaniline; 2-phenylocresol; methylhydroxanilinium chloride; 1,5-naphthalenediol; 1,7-naphthalenediol; 3,4-p-Cresol; 2-nitro-5-glyceryl methylnitrite; 4-nitroguaianol; 3-nitro-p-hydroxyethylaminophenol; 2-nitro-N-hydroxyethyl-p-anisidine; nitrophenol; 4-nitrophenyl aminothiurea; 4-nitro-p-phenylenediamine dihydrochloride; 2-nitro-p-phenylenediamine dihydrochloride; 4-nitro-o-phenylenediamine HCl; 4-nitro-m-phenylenediamine HCl; 4-nitro-n-phenylenediamine; 4-nitro-o-phenylenediamine sulfmate; 2-nitro-p-phenylenediamine sulfmate; 4-nitro-p-phenylenediamine sulfmate; 2-nitro-p-phenylenediamine sulfmate; 6-nitro-2,5-pyridinediamine; 6-nitro-o-toluidine; PEG-3 2,2'-di-p-phenylenediamine; p-phenylenediamine HCl; p-phenylenediamine sulfmate; phenyl methyl pyrazolone; N-phenyl-p-phenylenediamine HCl; pigment blue 15:1; pigment violet 23; pigment yellow 13; pyrocatechol; resorcinol; sodium picramate; sodium sulfanilate; solvent yellow 85; solvent yellow 172; tetramino-pyridinediamine sulfmate; tetrabromophenol blue; 2,5,6-triamino-4-pyrimidin sulfide; 1,2,4-trihydroxybenzene.

Examples of nail care ingredients include butyl acetate; ethyl acetate; nitrocelulose; acetyl tributyl citrate; isopropyl alcohol; adipic acid/neopentyl glycol/trimelitie anhydride copolymer; steeralkonium benenate; acrylates copolymer; calcium pantothenate; Cetaria islandica extract; Chondrus crispus; styrene/acrylates copolymer; trimethylpentanediyl dibenzoate-1; polyvinyl butyral; N-butyl alcohol; propylene glycol; butylene glycol; nica; silica; tin oxide; calcium borosilicate; synthetic fluorophlogopite; polyethylene terephtalate; sorbitan laurate derivatives; talc; jojoba extract; diamond powder; isobutylylphenoxy epoxy resin; silk powder; and mixtures thereof.

Examples of fragrances or perfume include hexyl cinnamic aldehyde; anisaldehyde; methyl-2-hexyl-3-oxocyclopentenone carboxylate; dodecalactone gamma; methylphenylcarbinyl acetate; 4-acetyl-6-tert-butyl-1,1-dimethyl indane; patchouli; eibunan resinoid; labdanum; vetivert; copaiba balsam; frir balsam; 4-(4-hydroxy-4-methyl pentyl)-3-cyclohexene-1-carboxaldehyde; methyl anthranilate; gerniol; geranyl acetate; linalool; citronelol; terpinyl acetate; benzyl salicylate; 2-methyl-3-(p-isopropylphenyl)propanal; phenoxyethanol isobutylate; cedryl acetel; abepine; musk fragrances; macrocyclic ketones; macrolactone musk fragrances; ethylene brassylate; and mixtures thereof. Further perfume ingredients are described in detail in standard text book references such as Perfume and Flavour Chemicals, 1969, S. Artander, Montclair, N.J.

Examples of antioxidants are acetylstyrne, arbutin, ascorbic acid, ascorbic acid polypeptide, ascorbyl dipalmitate, ascorbyl methylsilanol pectinate, ascorbyl palmitate, ascorbyl steante, BHA, p-hydroxyanisole, BHT, t-butyl hydroquinone, caffeic acid, Camellia sinensis Oil, chitosan ascorbate, chitosan glycolate, chitosan salielyate, chlorogenic acids, cysteine, cysteine HC1, decyl mercaptomethylimidazole, erythorobic acid, diaminohydroquinone, di-butylhydroquinone, dicyclopiropionate; dicyclopiropionate, dirimyristyl thiodipropionate, dioleoyl tlycerol methylsilanol, isoscerin, diosmine, disodium ascorbyl sulfate, disodium rutinyl disulfate, disoearlo thiodipropionate, diridecyl thiodipropionate, dodecyl gallate, ethyl ferulate, ferulic acid, hydroquinone, hydroxylamine HC1, hydroxylamine sulfate, isocysteine thioglycolate, kojic acid, madecassoside, magnesium ascorbate, magnesium ascorbyl phosphate, melatonin, methoxy-PEG-7 rutinyl succinate, methylene di-t-butylresol, methylsilanol ascorbate, nordihydroguaiaretic acid, octyl gallate, phenylthioglycolic acid, phloroglucinol, potassium ascorbyl tocuperyl phosphate, thioglycolamide, potassium sulfate, propyl gallate, resorcinic acid, rutin, sodium ascorbate, sodium ascorbyl cholesterol phosphate, sodium bisulfite, sodium erythorbate, sodium metabisulfite, sodium sulfate, sodium thioglycolate, sorbityl fufurill, tea tree Melaleuca alternifolia (oil), tocopherol acetate, tetrahydrodeoxytobecarate, tetrahydrodiferen- floylmethane, tocopherol linolate/oleate, thioglycolyl, tocopherol succinate, thioglycolic acid, thioglycolic acid, thiosalicylic acid, thioaurate, retinol, tocopherol-5, tocopherol-10, tocopherol-12, tocopherol-18, tocopherol-50, tocopherol, tocopherol, tocopherol linolate, tocopherol nicotinate, tocquimine, o-tolyl biguanide, tris(nonylphenyl) phosphate, ubiquinone, zinc dibutylthiocarbamate, and mixtures thereof.

Examples of oxidizing agents are ammonium persulfate, calcium peroxide, hydrogen peroxide, magnesium peroxide, melamine peroxide, potassium bromate, potassium carbonate, potassium chlorate, potassium persulfate, sodium bromate, sodium carbonate peroxide, sodium chlorate, sodium iodate, sodium perborate, sodium persulfate, stromium dioxide, streonium peroxide, urea peroxide, zinc peroxide, and mixtures thereof.
[0122] Examples of reducing agents are ammonium bisulfite, ammonium sulfite, ammonium thiglycolate, ammonium thiolactate, cysteine HCl, cystein, cysteine HCl, ethanalamine thiglycolate, glutathione, glyceryl thioglycolate, glyceryl thiopropionate, hydroquinone, p-hydroxyanisole, isoeyctyl thiglycolate, magnesium thiglycolate, mercapto propionic acid, potassium metabisulfite, potassium sulfite, potassium thiglycolate, sodium bisulfite, sodium hydrosulfite, sodium hydroxy methane sulfonate, sodium metabisulfite, sodium sulfate, sodium thiglycolate, strontium thiglycolate, superoxide dismutase, thioglucin, thioglycolic acid, thiolactic acid, thiosalicylic acid, zinc formaldehyde sulfoxylate, and mixtures thereof.

[0123] Examples of propellant gases include carbon dioxide, nitrogen, nitrous oxide, volatile hydrocarbons such as butane, isobutane, or propane, and chlorinated or fluorinated hydrocarbons such as dichlorodifluoromethane and dichlorotetrafluoroethane or dimethyl ether; and mixtures thereof.

[0124] Examples of antiacne agents include salicylic acid, sulfur benzoyl, peroxide, tretinoin, and mixtures thereof.

[0125] Examples of antibacterial agents include chlor hexadiene gluconate, alcohol, benzalkonium chloride, benzethonium chloride, hydrogen peroxide, methylbenzenethionium chloride, phenol, poloxamer 188, povidone-iodine, and mixtures thereof.

[0126] Examples of antifungal agents include miconazole nitrate, calcium undecylenate, undecylenic acid, zinc undecylenate, and mixtures thereof.

[0127] Examples of therapeutic active agents include penicillin, cephalosporins, tetracyclines, macrolides, epinephrine, amphetamines, aspirin, acetaminophen, barbiturates, catecholamines, benzo diazepine, thiopental, codeine, morphine, procaine, lidocaine, benzocaine, sulphonamides, ticonazole, perbuterol, furosamide, prazosin, hormones, prostaglandins, carbamicilin, salbutamol, haloperidol, suramin, indomethacin, diclofenac, glafenine, dipriddamole, theophylline, hydrocortisone, steroids, scopolamine, and mixtures thereof.

[0128] Examples of external analgesics are benzyl alcohol, capscium oleoresin (Capsicum frutescens oleoresin), methyl salicylate, camphor, phenol, capsicain, juniper tar (Juniperus oxycedrus tar), phenolate sodium (sodium phenoxide), capsicum (Capsicum Frutescens), menthol, resorcinol, methyl nicotinate, turpentine oil (turpentine), and mixtures thereof.

[0129] An example of a skin bleaching agent is hydroquinone.

[0130] Examples of anti-cancer agents include alkylating agents (such as busulfan, fluorodopa), antiinfective agents (such as colchicine, rhizoxin), topoisomerase I inhibitors (such as camptothecin and its derivatives), topoisomerase II inhibitors (such as menogaril, amonafide), RNA/DNA or DNA anti-metabolites (such as aciclovir, ganciclovir), plant alkaloids and terpenoids, antineoplastics, some plant-derived compounds (such as podophyllotoxin, vincals alkaloids), and mixtures thereof.

[0131] Examples of diuretics include loop diuretics (such as bumetanide, furosemide), thiazide diuretics (such as chlorothiazide, hydroflumethiazide), potassium-sparing diuretics (such as amiloride, spironolactone), carbonic anhydrase inhibitors (such as acetazolamide), osmotic diuretics (such as mannitol), and mixtures thereof.

[0132] Examples of agents for treating gastric and duodenal ulcers include proton pump inhibitor (such as lansoprazole, omeprazole), acid blockers or H2 histamine blockers (such as cimetidine, ranitidine), bismuth, sucralfate, and mixtures thereof.

[0133] Examples of proteolytic enzymes include nattokinase, serratiopeptidase, bromelain, papain, and mixtures thereof.

[0134] Examples of antihistamine or H1 histamine blockers include brompheniramine, clemastine, cetirizine, loratadine, fexofenadine, and mixtures thereof.

[0135] Examples of sedatives include barbiturates (such as phenobarbital), benzodiazepines (such as lorazepam), herbal sedatives, benzodiazepine-like drugs (such as zolpidem, zopiclone), and mixtures thereof.

[0136] Examples of bronchodilators include short-acting β2-agonists and long-acting β2-agonists, anticholinergics, and mixtures thereof.

[0137] The formulations of the present invention also include diltuents. Such diltuents are often necessary to decrease the viscosity of the formulation sufficiently for application.

[0138] Examples of diltuents include silicon containing diltuents such as hexamethyldisiloxane, octamethytriloxane, and other short chain siloxanes such as octamethyltetrasiloxane, decamethyldotrisiloxane, dodecamethylpentasiloxane, tetradecamethylhexasiloxane, hexadecamethylheptasiloxane, heptamethyl-3,3′-[trimethylsiloxy]trisiloxane, cyclic siloxanes such as hexamethyldisiloxane, octamethyldisiloxane, decamethyldotrisiloxane, dodecamethylcyclosiloxane, dodecamethylcyclohexasiloxane: organic diltuents such as butyl acetate, alkanes, alcohols, ketones, esters, ethers, glycols, glycol ethers, hydrofluorocarbons or any other material which can dilute the formulation without adversely affecting any of the component materials of the cosmetic composition. Hydrocarbons include isododecane, isohexadecane, Isopar L (C11-C13), Isopar H (C11-C12), hydrogenated polydecane. Ethers and esters include isodecyl neopentanoate, neopentylglycol heptanoate, glycol distearate, dicaprylyl carbonate, diethylhexyl carbonate, propylene glycol butyl ether, ethyl-3-ethylhexypropionate, propylene glycol methyl ether acetate, triaclyl neopentanoate, propylene glycol methyl ethyl acetate (PGMEA), propylene glycol methylether (PGME), cetyl dodecylnitopentanoate, diisobutyl adipate, disopropyl adipate, propylene glycol dicaprylate dicaprate, and octyl palmitate. Additional organic diltuents include fats, oils, fatty acids, and fatty alcohols.

[0139] Further materials suitable for the personal care and health care are well known to the person skilled in the art and are described in many text books as well as other publications.

[0140] The general level of organosilane (A) in the cosmetic compositions may vary from 0.01% to 20% by weight, alternatively from 0.05% to 10%, alternatively from 0.1% to 5%, relative to the total weight of the cosmetic composition. The cosmetic ingredient (B) is present at a level of from 0.01% to 99.99% by weight, relative to the total weight of the cosmetic composition. The cosmetic ingredient (B) may be a mixture of cosmetic ingredients (B) as listed above.

[0141] The cosmetic composition may be prepared by a process comprising the steps of:

1. Mixing an organosilane (A) having the formula:

   \[ (R)_3SiO(R'-O)_nSi=O(CH_2_3CH_3_2O)_m(C_2H_4O)_n \]

   where

   \[ n = 1, 2, 3 \]
   \[ m = 0, \]

2. n may vary from 0 to 30, with the proviso aab;
[0146]  \( R' \) is a hydrocarbon group containing 1 to 12 carbon atoms,

[0147]  \( R' \) is hydrogen or an alkyl group containing 1 to 6 carbon atoms,

[0148]  \( R' \) is a divalent hydrocarbon group containing 2 to 12 carbon atoms,

[0149]  \( R' \) is hydrogen, \( R' \), or an acetyl group

[0150]  ii. with at least one cosmetic ingredient (B)

[0151]  iii. optionally in the presence of a cosmetically acceptable medium.

[0152]  The process may be conducted at temperatures ranging from 15 to 90°C, alternatively from 20 to 60°C, alternatively at room temperature (25°C), using simple propeller mixers, Brookfield counter-rotating mixers, or homogenizing mixers. No special equipment or processing conditions are typically required. Depending on the type of composition prepared, the method of preparation will be different, but such methods are well known in the art.

[0153]  The cosmetic compositions may be in the form of a cream, a gel, a powder (free flowing powder or pressed), a paste, a solid, freely pourable liquid, an aerosol. The cosmetic compositions may be in the form of monophasic systems, biphasic or alternate multi phasic systems; emulsions, e.g. oil-in-water, water-in-oil, silicone-in-water, water-in-silicone; multiple emulsions, e.g. oil-in-water-in-oil, polyol-in-silicone-in-water, oil-in-water-in-silicone.

[0154]  Skin care compositions include shower gels, soaps, hydrogels, creams, lotions and balms; antiperspirants; deodorants such as sticks, soft solid, roll on, aerosol, and pump sprays; skin creams; skin care lotions; moisturizers; facial treatments such as wrinkle control or diminishing treatments; exfoliates; body and facial cleansers; bath oils; perfumes; colognes; sachets; sunscreens; mousses; patches; pre-shave and after-shave lotions; shaving soaps; shaving lathers; depilatories; make-ups; color cosmetics; foundations; concealers; blushes; lipsticks; eyeliners; mascaras; oil removers; color cosmetic removers, powders, and kits thereof.

[0155]  Hair care compositions include shampoos, rinse-off conditioners, leave-in conditioners and styling aids, gels, sprays, pomades, mousses, waxes, cuticle coats, hair colorants, hair relaxants, hair straighteners, permanents, and kits thereof.

[0156]  Nail care compositions include color coats, base coats, nail hardeners, and kits thereof.

[0157]  Health care compositions may be in the form of ointments, creams, gels, mousses, pastes, patches, sprays on bandages, foams and/or aerosols or the like, medicament creams, pastes or sprays including anti-acne, dental hygienic, antibiotic, healing promotive, which may be preventative and/or therapeutic medicaments, and kits thereof.

[0158]  The cosmetic compositions may be used by the standard methods, such as applying them to the human or animal body, e.g. skin or hair, using applicators, brushes, applying by hand, pouring them and/or possibly rubbing or massaging the composition onto or into the body. Removal methods, for example for colour cosmetics are also well known standard methods, including washing, wiping, peeling and the like.

[0159]  The invention also comprises a method of treating hair or skin by applying to it a cosmetic composition according to the first aspect of the invention.

[0160]  The cosmetic compositions may be used on hair in a conventional manner. An effective amount of the composition for conditioning hair is applied to the hair. Such effective amounts generally range from about 1 g to about 50 g, preferably from about 1 g to about 20 g. Application to the hair typically includes working the cosmetic composition through the hair such that most or all of the hair is contacted with the cosmetic composition. This method for conditioning the hair comprises the steps of applying an effective amount of the hair care composition to the hair, and then working the composition through the hair. These steps can be repeated as many times as desired to achieve the desired conditioning benefit.

[0161]  Benefits obtained from using the cosmetic compositions on hair include one or more of the following benefits: hair conditioning, softness, detangling ease, silicone deposition, anti-static, anti-frizz, lubricity, shine, strengthening, viscosity, tactile, wet combing, dry combing, improvement in coloration process, color retention, straightening, heat protection, styling, or curl retention.

[0162]  For example, a process to color keratinous fibers comprises the steps of

[0163]  i. Mixing an organosilane (A) having the formula;

\[
(\text{R'})_{3-n}(\text{R'O})_n\text{SiR'O(CH}_2\text{CH}_2\text{O})_n(\text{C}_3\text{H}_6\text{O})_\text{n R''}
\]

\[
\text{R''}
\]

[0164]  n is 1, 2, or 3,

[0165]  \text{R''}

[0166]  \text{b} may vary from 0 to 30, with the proviso \text{a} \geq \text{b},

[0167]  \text{R''}

[0168]  \text{R''}

[0169]  \text{R''}

[0170]  \text{R''}

[0171]  with at least one cosmetic ingredient (B) selected from hair dyes, hair colorants,

[0172]  optionally in the presence of a cosmetically acceptable medium,

[0173]  ii. Applying the mixture to the keratinous fibers;

[0174]  iii. Optionally let the mixture stand on the keratinous fibers;

[0175]  iv. Optionally rinsing the keratinous fibers.

[0176]  The optional standing time of the process to color keratinous fibers may range from of 10 seconds to 2 hours, alternatively of from 1 minute to 45 minutes, alternatively of from 5 minute to 30 minutes. The process to color keratinous fibers may include the steps of heating, or covering the keratinous substrates during the standing time to reach more intense and deep color of the keratinous fiber.

[0177]  As further example, a process to maintain color to keratinous fibers comprises the steps of

i. Mixing an organosilane (A) having the formula;

\[
(\text{R'})_{3-n}(\text{R'O})_n\text{SiR'O(CH}_2\text{CH}_2\text{O})_n(\text{C}_3\text{H}_6\text{O})_\text{n R''}
\]

\[
\text{R''}
\]

[0178]  n is 1, 2, or 3,

[0179]  \text{b} may vary from 0 to 30, with the proviso \text{a} \geq \text{b},

[0180]  \text{R''}

[0181]  \text{R''}

[0182]  \text{R''}

[0183]  \text{R''}

[0184]  \text{R''}
R² is hydrogen, R¹, or an acetyl group

with at least one cosmetic ingredient (B)

selected from surfactants, hair dyes, hair colorants,

optionally in the presence of a cosmetically acceptable medium;

ii. Applying the mixture to the keratinous fibers;

iii. Optionally let the mixture stand on the keratinous fibers;

iv. Optionally rinsing the keratinous fibers.

The optional standing time of the process to maintain color to keratinous fibers may range from 10 seconds to 2 hours, alternatively of from 1 minute to 45 minutes, alternatively of from 5 minute to 30 minutes. The process to maintain color to keratinous fibers may include the steps of heating, covering the keratinous substrates during the standing time to reach more intense and deep color of the keratin fiber.

In a further example of conditioning hair, a process to reduce frizzing of keratinous fibers comprises the steps of

i. Mixing an organosilane (A) having the formula:

\[(R^1)_{2n}(R^2O)_{n}SiR^3O(CH_2CH_2O)_{m}(CH_2H_2O)\]

where

n is 1, 2, or 3,

a, b may vary from 0 to 30, with the proviso a ≠ b,

R² is a hydrocarbon group containing 1 to 12 carbon atoms,

R³ is a hydrocarbon group containing 1 to 6 carbon atoms,

R⁴ is a divalent hydrocarbon group containing 2 to 12 carbon atoms,

R⁵ is a hydrocarbon group containing 1 to 6 carbon atoms,

R⁶ is hydrogen or an acetyl group with water;

ii. applying the mixture to the keratinous fibers,

iii. optionally letting the mixture stand on the keratinous fibers,

iv. optionally rinsing the keratinous fibers.

The cosmetic compositions may be used on skin in a conventional manner. An effective amount of the composition for the purpose is applied to the skin. Such effective amounts may generally not range from about 1 mg/cm² to about 3 mg/cm². Application to the skin typically includes working the cosmetic composition into the skin. This method for applying to the skin comprises the steps of contacting the skin with the cosmetic composition in an effective amount and then rubbing the composition into the skin. These steps can be repeated as many times as desired to achieve the desired benefit.

Benefits obtained from using the cosmetic compositions on skin include one or more of the following benefits: skin softness, suppleness, moisturization, skin feel, foam generation.

For example, a process for hydrating skin comprises the steps of

i. Mixing an organosilane (A) having the formula:

\[(R_1)_{3-n}(R_2O)_{n}SiR^3O(CH_2CH_2O)_{m}(CH_2H_2O)\]

where

n is 1, 2, or 3,

a, b may vary from 0 to 30, with the proviso a ≠ b,

R¹ is a hydrocarbon group containing 1 to 12 carbon atoms,

R² is hydrogen or an acetyl group containing 1 to 6 carbon atoms,
Example 2
Preparation of Poly (EO) Methyl 3-(Methyldimethoxysilyl) Propyl Ether

[0218] PG SF-Allyl EO7-Me (489.378 g; from UNIOX MUS-4 from NOF Corporation) was loaded in a 2 L 3-necked round-bottomed flask (RBF) fitted with a crescent-shaped paddle stirring rod, a Claisen adaptor itself fitted with a water cooled condenser and a 250 mL additional funnel loaded with Dow Corning® Z-6701 Silane (110.622 g), and a thermometer adaptor itself fitted with a thermal couple, all under nitrogen purge. The reaction mixture was heated to 45°C when 10 wt. % or 11 g of Z-6701 silane was fed in the RBF immediately followed by the addition of 1% Dow Corning 2-0707 INT catalyst in IPA (~50 μL or 6 ppm). The exotherm observed instantaneously was 2-3°C. The remaining Z-6701 in the additional funnel was being dispensed into the RBF at ~1.67 g/min rate while temperature set at 55°C plus 2°C. exotherm was maintained throughout the addition. When all Z-6701 was in the RBF, the temperature of mixture dropped back to the 53°C set point and hence, there was a second addition of 1% Dow Corning® 2-0707 INT catalyst in IPA (~500 μL or 7 ppm). The mixture was then held for another 2 h to allow reaction gone for completion in which the third addition of 1% Dow Corning® 2-0707 INT catalyst in IPA (~500 μL or 7 ppm) were made after the first hour of reflux. A constant 2°C. exotherm was observed after each time the catalyst was added and had lasted for 1 h except for the last addition which lasted only 30 minutes. Once the reaction was determined to be done, residual SiH was measured by IR which was 35 ppm at peak 2150 cm⁻¹. The room temperature mixture was stirred under a nitrogen purge for a minimum of 8 hours. The final residual SiH content measured by IR was 4 ppm at 2150 cm⁻¹. The final finished product was pressure-filtered on 20 μm sized filter paper.

Example 3
Preparation of Poly (EO) Hydroxyl 3-(Methyldioethoxysilyl) Propyl Ether

[0219] PG SF-Allyl EO7-OH (191.85 g; from Dow Chemical Company) was loaded in a 500 mL 3-necked round-bottomed flask (RBF) fitted with a crescent-shaped paddle stirring rod, a Claisen adaptor itself fitted with a water cooled condenser and a 250 mL additional funnel loaded with methyl dioethoxysilane (58.67 g from Gelest, Inc), and a thermometer adaptor itself fitted with a thermal couple, all under nitrogen purge. The reaction mixture was heated to 60°C when 10 wt. % or 6 g of methyl dioethoxysilane was dispensed in the RBF immediately followed by the addition of 1% Dow Corning® 2-0707 INT catalyst in IPA (~230 μL or 8 ppm). The exotherm observed instantaneously was 7°C. The remaining methyl dioethoxysilane in the additional funnel was being dispensed into the RBF at ~0.88 g/min rate while temperature was set at 67°C and being maintained at ~75°C throughout the addition. When all methyl dioethoxysilane was added to the RBF, the temperature was set at 75°C to reflux for an hour to allow the reaction to go to completion. The reaction mixture was cooled down to 60°C and 159 ppm of residual SiH was obtained by IR at peak 2150 cm⁻¹. A second addition of 1% Dow Corning® 2-0707 INT catalyst in IPA (~50 μL or ~1.7 ppm) was charged to the reaction mixture, however, no exotherm was detected. The reaction temperature was increased to 80°C and refluxed for an hour. The residual SiH was measured 126 ppm. On the following day, the product mixture was transferred to a 1 L round-bottomed flask for rotary evaporation. Some material was stripped out while the vacuum pressure was at ~3-4 mmHg and the water bath was at 80°C. This process lasted for two hour and the final product has 13 ppm of SiH left. The final product was pressure-filtered on 20 μm sized filter paper.

Example 4
Preparation of Poly (EO) Hydroxyl 3-(Methyldimethoxysilyl) Propyl Ether

[0220] PG SF-Allyl EO7-OH (80.58 g; from Dow Chemical Company) was loaded in a 250 mL round-bottomed flask (RBF) fitted with a crescent-shaped paddle stirring rod, a Claisen adaptor itself fitted with a water cooled condenser and a 250 mL additional funnel loaded with Dow Corning® Z-6701 Silane (20.06 g), and a thermometer adaptor itself fitted with a thermal couple, all under nitrogen purge. The reaction mixture was heated to 45.6°C when 10 wt. % or 2 g of Dow Corning® Z-6701 Silane was dispensed in the RBF immediately followed by the addition of 1% Dow Corning® 2-0707 INT catalyst in IPA (~60 μL or 5 ppm). The exotherm observed instantaneously was 0.9°C. The remaining Dow Corning® Z-6701 Silane in the additional funnel was being dispensed into the RBF at ~0.21 g/min rate while temperature was set at 50°C and being maintained at ~49-51°C throughout the addition. When all methyl dimethoxysilane was added to the RBF, the temperature was set at 57°C to reflux for 2.5 hours to allow reaction gone for completion.

[0221] The reaction mixture was cooled down to room temperature and 121 ppm of residual SiH was obtained by IR at peak 2150 cm⁻¹. On the following day, extra PG SF-Allyl EO7-OH (5.48 g from Dow Chemical Company) was added to the reaction mixture while holding the reaction at 57±1°C for 4.5 h, resulting in 20 ppm residual SiH. The room temperature mixture was stirred under a nitrogen purge for a minimum of 8 hours. The final residual SiH content measured by IR was still 20 ppm at 2150 cm⁻¹. The final finished product was pressure-filtered on 20 μm sized filter paper.

Example 5
Preparation of Poly (EO) Acetate 3-(Methyldimethoxysilyl) Propyl Ether

[0222] PG SF-Allyl EO7-Ac (247.77 g) was loaded in a 500 mL 3-necked round-bottomed flask (RBF) fitted with a crescent-shaped paddle stirring rod, a Claisen adaptor itself fitted with a water cooled condenser and a 250 mL additional funnel loaded with Dow Corning® Z-6701 Silane (52.98 g), and a thermometer adaptor itself fitted with a thermal couple, all under nitrogen purge. The reaction mixture was heated to 47°C when 10 wt. % or 5 g of Dow Corning® Z-6701 Silane was dispensed in the RBF immediately followed by the addition of 1% Dow Corning® 2-0707 INT catalyst in IPA (~270 μL or 8 ppm). The exotherm observed instantaneously was 1-2°C. The remaining Dow Corning® Z-6701 Silane in the additional funnel was being dispensed into the RBF at ~0.79 g/min rate while temperature was set at 54°C and being maintained below 58°C throughout the addition. When all Dow Corning® Z-6701 Silane was added to the RBF, the temperature was set at 54°C to reflux for an hour to allow reaction gone for completion. 540 ppm of residual SiH was
obtained by IR at peak 2150 cm⁻¹. Another hour of reflux was proceeded and the residual SiH was measured 300 ppm. The room temperature mixture was stirred under a nitrogen purge for a minimum of 8 hours. The final residual SiH content measured by IR was 28 ppm at 2150 cm⁻¹. The final finished product was pressure-filtered on 20 µm sized filter paper.

Example 6

[0223] To a three neck round bottom flask was added 171.8 g (0.29 moles) of a polyether containing an allyl end, approximately 12 ethylene oxide units and capped with acetate.

[0224] Next, 28.2 g (0.21 moles) of methyl diethoxy silane (MDES) was added to the flask. With stirring under N₂, the mixture was heated to 75°±5°C and then 3 ppm of Pt catalyst was added. After a small exotherm (<10°±1°C), the mixture was maintained at 85°±5°C for 6 hours. At this point the reaction was 98.9% complete as measured by SiH consumption via FTIR. The room temperature mixture was stirred under a nitrogen purge for a minimum of 8 hours. Finally, the mixture was filtered through Celite that was supported on a Nylon filter to yield 167 g (83% yield) of a light yellow oil. Characterization of this material indicated that the desired product had been obtained as evidenced by the single peak in the ²⁹Si NMR at approximately -5.6 ppm.

Example 7

[0225] To a three neck round bottom flask was added 189.3 g (97 mmol) of a polyether containing an allyl end, approximately 18 ethylene oxide units and 18 propylene oxide units and capped with acetate. Next, 10.9 g (81 mmol) of methyl diethoxy silane (MDES) was added to the flask. With stirring under N₂, the mixture was heated to 75°±5°C and then 4 ppm of Pt catalyst was added. After a small exotherm (<10°±1°C), the mixture was maintained at 85°±5°C for 3 hours. At this point the reaction was 99.6% complete as measured by SiH consumption via FTIR. The room temperature mixture was stirred under a nitrogen purge for a minimum of 8 hours. Finally, the mixture was filtered through Celite that was supported on a Nylon filter to yield 153 g (76% yield) of a light yellow oil. Characterization of this material indicated that the desired product had been obtained as evidenced by the single peak in the ²⁹Si NMR at approximately -5.6 ppm.

Example 8

[0226] To a three neck round bottom flask was added 168.7 g (0.31 moles) of a polyether containing an allyl end, approximately 12 ethylene oxide units and was not capped. Next, 31.4 g (0.24 moles) of methyl diethoxy silane (MDES) was added to the flask. With stirring under N₂, the mixture was heated to 75°±5°C and then 3 ppm of Pt catalyst was added. After a small exotherm (<10°±1°C), the mixture was maintained at 85°±5°C for 3 hours. At this point the reaction was 99.5% complete as measured by SiH consumption via FTIR. The room temperature mixture was stirred under a nitrogen purge for a minimum of 8 hours. Finally, the mixture was filtered through Celite that was supported on a Nylon filter to yield 149 g (74% yield) of a light yellow oil. Characterization of this material indicated that the desired product had been obtained as evidenced by the single peak in the ²⁹Si NMR at approximately -5.6 ppm.

Example 9

Hair Care Evaluation for Reducing Frizz

[0227] To demonstrate the conditioning ability of the present silane polyethers to reduce frizz, a series of hair conditioning evaluations were conducted on the silane polyether of Example 8 using the following procedures and materials.

[0228] Hair tresses were obtained from International Hair Importers and Products, and were thick frizzy, 2.84 g/20 cm² net, 1" wide (cut in half to make two 0.5" tresses). All hair tresses were washed in a 9% SLES (sodium laurel ether sulfate) solution and were then combed through 5 times and were then dried overnight. The tresses were then treated with the test solution by submerging for 10 seconds, making sure that all the hair was wetted. Excess solution was wrung from the tresses and then they were combed through 5 times. Tresses were then laid on a tray and placed in a 40°C oven for 1 hour to dry. Tresses were placed in a humidity chamber (25°C, 70% RH). Tresses were compared prior to placing in the humidity chamber and then at 0, (initial), 30, 60, 120, 180 minutes and after removing from the humidity chamber. Test solutions were 2% of the silane polyether sample of Example 8 in water with the pH adjusted to 4, 7 or 10 with the control being deionized (DI) water. An aqueous leave-in conditioner benchmark with frizz control claims was also tested as part of this study. The tresses were treated by applying 0.1 g hair of the treatment, stroked for 30 seconds and then combed through 5 times, dried in same manner as the other tresses and placed in the humidity chamber.

[0229] Treated tresses did not feel coated or tacky. Tress treated with water felt the roughest, while the tress treated with silane polyether at pH 4 felt the smoothest. The tresses treated with pH 7 and pH 10 felt similar and better than water, but not as good as pH 4.

[0230] Tresses treated with the silane polyether of Example 8 (at all pH values) could be combed through in one pass (control could not) and held shape much better than the control. All the tresses treated with the silane polyether (regardless of pH) had much less fizzle than the control at all times in and out of the humidity chamber.

[0231] Tress treated leave-in conditioner benchmark felt the smoothest and slipperiest, followed by the tress treated with the silane polyether. The tress treated with DI water felt roughest. The commercial benchmark left a heavier feel on the tresses compared to the silane polyether. Both treated tresses could be combed through in one pass and both held their shape much better and had less frizz than the tress treated with DI water.

1. A cosmetic composition comprising
   i. an organosilane (A) having the formula;
   \((R_1)_2Si(R_2)^3OCH(CH_2)_{n-1}CH_2O)_{(n-2)}(CH_2)_b\) where
   \(n\) is 1, 2, or 3,
   \(a\) is 1, \(b\) may vary from 0 to 30, with the proviso \(a+b\),
   \(R_1\) is a hydrocarbon group containing 1 to 12 carbon atoms,
   \(R_2\) is hydrogen or an alkyl group containing 1 to 6 carbon atoms,
   \(R_3\) is a divalent hydrocarbon group containing 2 to 12 carbon atoms,
   \(R_4\) is hydrogen, \(R_1\), or an acetyl group
   ii. at least one cosmetic ingredient (B).

2. The cosmetic composition of claim 1 where \(n\) is 2.
3. The cosmetic composition of claim 1 where a ranges from 4 to 30.
4. The cosmetic composition of claim 1 where R’ is methyl and R” is methyl or ethyl.
5. The cosmetic composition of claim 1 where R’ is propylene or CH₃CH₂C(CH₃)₂—.
6. The cosmetic composition of claim 1 where organosilane (A) has the following average formula:
   \((CH₂)₅(CH₂CH₂O)₅CH₂CH₂O(CH₂CH₂O)₅CH₂\).
7. The cosmetic composition of claim 1 where organosilane (A) has the following average formula:
   \((CH₂)₅(CH₂O)₅SiCH₂CH₂O(CH₂CH₂O)₅CH₂\).
8. The cosmetic composition of claim 1 comprising a cosmetically acceptable medium.
9. The cosmetic composition of claim 1 where the cosmetic ingredient (B) is selected from emulsifiers, waxes, moisturizers, surfactants, preservatives, and antioxidants, sebum absorbents, sebum control agents, vegetable extracts, botanical extracts, vitamins, and their derivatives.
10. A process for preparing a cosmetic composition comprising the steps of mixing an organosilane (A) having the formula:
    \((R'O)₃(R''O)₃SiR'O(CH₂CH₂O)₅(C₅H₁₀)₃bR₄\) where n is 1, 2, or 3,
    \(a≤b\), b may vary from 0 to 30, with the proviso a ≥ b,
    R’ is a hydrocarbon group containing 1 to 12 carbon atoms,
    R₂ is hydrogen or an alkyl group containing 1 to 6 carbon atoms,
    R₃ is a divalent hydrocarbon group containing 2 to 12 carbon atoms,
    R₄ is hydrogen, R’₁, or an acetyl group
11. A process for preparing skin comprising the steps of:
   i. Mixing an organosilane (A) having the formula:
      \((R'O)₃(R''O)₃SiR'O(CH₂CH₂O)₅(C₅H₁₀)₃bR₄\) where n is 1, 2, or 3,
      \(a≤b\), b may vary from 0 to 30, with the proviso a ≥ b,
      R’ is a hydrocarbon group containing 1 to 12 carbon atoms,
      R₂ is hydrogen or an alkyl group containing 1 to 6 carbon atoms,
      R₃ is a divalent hydrocarbon group containing 2 to 12 carbon atoms,
      R₄ is hydrogen, R’₁, or an acetyl group
with at least one cosmetic ingredient (B),
   ii. Applying it to the skin
   iii. Optionally rinsing the skin.
13. A process to color keratinous fibers comprising the steps of:
   i. Mixing an organosilane (A) having the formula:
      \((R'O)₃(R''O)₃SiR'O(CH₂CH₂O)₅(C₅H₁₀)₃bR₄\) where n is 1, 2, or 3,
      \(a≤b\), b may vary from 0 to 30, with the proviso a ≥ b,
      R’ is a hydrocarbon group containing 1 to 12 carbon atoms,
      R₂ is hydrogen or an alkyl group containing 1 to 6 carbon atoms,
      R₃ is a divalent hydrocarbon group containing 2 to 12 carbon atoms,
      R₄ is hydrogen, R’₁, or an acetyl group
   ii. Applying the mixture to the keratinous fibers
   iii. Optionally letting the mixture stand on the keratinous fibers
   iv. Optionally rinsing the keratinous fibers.
14. A process to maintain color to keratinous fibers comprising the steps of:
   i. Mixing an organosilane (A) having the formula:
      \((R'O)₃(R''O)₃SiR'O(CH₂CH₂O)₅(C₅H₁₀)₃bR₄\) where n is 1, 2, or 3,
      \(a≤b\), b may vary from 0 to 30, with the proviso a ≥ b,
      R’ is a hydrocarbon group containing 1 to 12 carbon atoms,
      R₂ is hydrogen or an alkyl group containing 1 to 6 carbon atoms,
      R₃ is a divalent hydrocarbon group containing 2 to 12 carbon atoms,
      R₄ is hydrogen, R’₁, or an acetyl group
   ii. Applying the mixture to the keratinous fibers
   iii. Optionally letting the mixture stand on the keratinous fibers
   iv. Optionally rinsing the keratinous fibers.
15. A process to reduce frizzing of keratinous fibers comprising the steps of:
   i. Mixing an organosilane (A) having the formula:
      \((R'O)₃(R''O)₃SiR'O(CH₂CH₂O)₅(C₅H₁₀)₃bR₄\) where n is 1, 2, or 3,
      \(a≤b\), b may vary from 0 to 30, with the proviso a ≥ b,
      R’ is a hydrocarbon group containing 1 to 12 carbon atoms,
      R₂ is hydrogen or an alkyl group containing 1 to 6 carbon atoms,
      R₃ is a divalent hydrocarbon group containing 2 to 12 carbon atoms,
      R₄ is hydrogen, R’₁, or an acetyl group
   ii. Applying the mixture to the keratinous fibers
   iii. Optionally letting the mixture stand on the keratinous fibers
   iv. Optionally rinsing the keratinous fibers.