(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 December 2017 (28.12.2017)

WIPO | PCT

(10) International Publication Number
WO 2017/220664 A1

(51) International Patent Classification:
A61Q 1/02 (2006.01) *A61K 8/81* (2006.01)
A61Q 1/06 (2006.01) *A61K 8/04* (2006.01)
A61Q 1/10 (2006.01)

(21) International Application Number:
PCT/EP2017/065260

(22) International Filing Date:
21 June 2017 (21.06.2017)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
1655893 23 June 2016 (23.06.2016) FR

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report (Art. 21(3))*

WO 2017/220664 A1

(54) Title: DISPERSION OF POLYMER PARTICLES IN A NON-AQUEOUS MEDIUM AND COSMETIC USE THEREOF

(57) Abstract: The invention relates to a dispersion of polymer particles stabilized with a stabilizer in a nonaqueous medium containing at least one hydrocarbon-based oil, the polymer of the particles being an acrylic polymer; the stabilizer being a polymer of a silicone macromonomer. The invention also relates to the composition comprising said dispersion of polymer particles. Cosmetic use for caring for and making up keratin materials.

Dispersion of polymer particles in a non-aqueous medium and cosmetic use thereof

The present invention relates to a dispersion of polymer particles dispersed in a nonaqueous medium, and also to a cosmetic composition comprising such a dispersion.

It is known practice in cosmetics to use dispersions of polymer particles, in organic media such as hydrocarbon-based oils, for instance hydrocarbons. Polymers are especially used as film-forming agents in makeup products such as mascaras, eyeliners, eyeshadows or lipsticks.

Document EP-A-749 747 describes in the examples dispersions in hydrocarbon-based oils (liquid paraffin, isododecane) of acrylic polymers stabilized with polystyrene/copoly(ethylene-propylene) diblock copolymers. However, when the solids (polymer + stabilizer) content exceeds 25% by weight, the dispersion then becomes too viscous, thus giving rise to formulation difficulties in cosmetic products on account of a large change in the viscosity of the final composition of these products.

Document WO-A-2010/046 229 describes dispersions in isododecane of acrylic polymers stabilized with block and especially triblock stabilizing polymers of acrylic monomers. In the examples, according to Example 1A, the stabilizing polymer is prepared by reversible chain-transfer controlled radical polymerization. This polymerization method is difficult to perform on an industrial scale since it requires a large number of intermediate purification steps to obtain the final polymer dispersion.

Moreover, dispersions of acrylic polymers in isododecane may have problems of compatibility with silicone oils, giving rise to phase separation of the dispersion.

There is thus a need for a stable dispersion of acrylic polymer stabilized in a nonaqueous medium comprising a hydrocarbon-based oil, which is easy to manufacture industrially, and which makes it possible to obtain a film that has good cosmetic properties, especially good gloss, and which is also compatible with silicone oils.

The Applicant has discovered that novel dispersions of particular acrylic polymer particles stabilized with a stabilizer based on a particular silicone macromonomer, in a hydrocarbon-based oil have good stability, especially after storage for 7 days at room temperature (25°C), are easy to manufacture industrially without using a large number of synthesis steps and also make it possible to obtain a film after application to a support which has good cosmetic properties, in particular good resistance to water, to oils and to sebum. These dispersions also have good compatibility with silicone oils, in particular when the dispersion medium comprises up to 75% by weight of silicone oil, relative to the total weight of oils present in the dispersion. Moreover, applying the dispersion to the hair confers good conditioning properties on the hair.

One subject of the present invention is thus a dispersion of particles of at least one polymer stabilized with a stabilizer in a nonaqueous medium containing at least one hydrocarbon-based oil, the polymer of the particles being a polymer of one or more particular monomers described below; the stabilizer being a polymer comprising from 80% to 100% by weight of silicone macromonomer (IV) as defined below, and from 0 to 20% by weight of monomer chosen from the monomers present in the polymer of said particles, relative to the total weight of the stabilizer.

The presence of the silicone macromonomer (IV) in the stabilizer makes it possible to obtain a polymer dispersion that is stable, especially after storage for 7 days at room temperature (25°C).

Another subject of the invention is a composition comprising, in a physiologically acceptable medium, a polymer particle dispersion as defined previously.

A subject of the invention is also a process for the nontherapeutic cosmetic treatment of keratin materials, comprising the application to the keratin materials of a composition as defined previously. The treatment process is in particular a process for caring for or making up keratin materials.

The dispersions according to the invention are thus constituted of particles, which are generally spherical, of at least one polymer in a nonaqueous medium.

The polymer of the particles is a polymer comprising (or resulting from the polymerization of) one or more monomers chosen from:
(a) ethylenically unsaturated acid monomers or the anhydride thereof;
(b) ethylenically unsaturated monomers containing a polyethylene glycol chain of formula (I), as described below;
(c) (meth)acrylates of formula (II) as described below;
(d) (meth)acrylates containing an aromatic group.

The ethylenically unsaturated acid monomer or the anhydride thereof (or monomer a) may be chosen from ethylenically unsaturated acid monomers comprising at least one carboxylic, phosphoric or sulfonic acid function, such as crotonic acid, itaconic acid, fumaric acid, maleic acid, maleic anhydride, styrenesulfonic acid, vinylbenzoic acid, vinylphosphoric acid, acrylic acid, methacrylic acid, acrylamidopropanesulfonic acid or acrylamidoglycolic acid, and salts thereof.
Preferably, the ethylenically unsaturated acid monomer is chosen from (meth)acrylic acid, preferably acrylic acid.

The salts may be chosen from salts of alkali metals, for example sodium or potassium; salts of alkaline-earth metals, for example calcium, magnesium or strontium; metal salts, for example zinc, aluminium, manganese or copper; ammonium salts of

formula NH_4^+; quaternary ammonium salts; salts of organic amines, for instance salts of methylamine, dimethylamine, trimethylamine, triethylamine, ethylamine, 2-hydroxyethylamine, bis(2-hydroxyethyl)amine or tris(2-hydroxyethyl)amine; lysine or arginine salts.

The ethylenically unsaturated monomer containing a polyethylene glycol (PEG) chain (or monomer b) is a monomer of formula (I):

$$CH_2=C(R_1)COO-(CH_2-CH_2-O)n-R_2 \quad (I)$$

wherein:
- R_1 is a hydrogen atom or a methyl radical;
- n is an integer between 2 and 50;
- R_2 is a hydrogen atom or a linear, branched or cyclic, saturated or unsaturated, optionally aromatic carbon-based radical, comprising 1 to 30 carbon atoms, which may comprise 1 to 4 non-adjacent heteroatoms chosen from O or S or an -NR'- group, R' denoting H or a C_1-C_4 alkyl group.

Preferably, n is between 2 and 20 and better still between 5 and 15.

R_2 is preferably a hydrogen atom or a C_1-C_4 alkyl group, a benzyl radical or a phenyl radical.
Mention may especially be made of the methyl, ethyl, propyl, benzyl, and phenyl radicals.

Among the preferred monomers of formula (I), mention may be made of:
- poly(ethylene glycol) (meth)acrylate in which R_1 is H or methyl; R2= H;
- methylpoly(ethylene glycol) (meth)acrylate, also known as methoxypoly(ethylene glycol) (meth)acrylate, in which R_1 is H or methyl and R_2 = methyl;
- phenylpoly(ethylene glycol) (meth)acrylates, also known as poly(ethylene glycol) (meth)acrylate phenyl ether, in which R_1 is H or methyl and R_2 = phenyl.

The most particularly preferred monomers of formula (I) are chosen from poly(ethylene glycol) (meth)acrylates and methylpoly(ethylene glycol) (meth)acrylates.
The monomer (I) preferably has a weight-average molecular weight of between 180 and 2300 g/mol, especially between 180 and 10 000 g/mol, or even between 300 and 800 g/mol.

(Meth)acrylates of formula (II) (or monomer c)

$CH_2=C(R)-COO-R'3-NR'_1R'_2$ (II)

wherein:
- R represents a hydrogen atom or a methyl group;
- R'^3 is a linear, branched or cyclic, saturated or unsaturated, optionally aromatic divalent

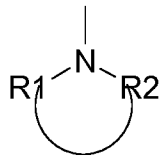
hydrocarbon-based radical, of 1 to 30 carbon atoms, which may comprise 1 to 6 heteroatoms chosen from O, N, and S;

- R'1 and R'2 represent, independently of each other:

(i) a hydrogen atom,

(ii) a linear, branched or cyclic, saturated or unsaturated, optionally aromatic alkyl group, comprising from 1 to 18 carbon atoms, especially from 1 to 12 carbon atoms, which may comprise 1 to 10 heteroatoms chosen from O, N, and S;

(iii) R1 and R2 possibly forming, with the nitrogen atom, a ring of formula:



which is saturated or unsaturated and optionally aromatic, said ring comprising 5 to 6 atoms (forming the ring) and especially 3 to 6 carbon atoms, said ring possibly being interrupted by 1 to 3 divalent groups chosen from -O-, -S- and -NH- and/or substituted by a group =O.

R'3 is preferably a divalent hydrocarbon-based radical having from 1 to 6 carbon atoms. In the radical R'3, the heteroatom(s), when present, may be inserted in the chain of said radical R'3, or else said radical R'3 may be substituted by one or more groups comprising same, such as OH, NH_2, NHR' or NR'R", with R' and R", which are identical or different, representing a linear or branched C_1-C_{12} alkyl, especially methyl or ethyl.

R'3 may especially be an alkylene radical such as methylene, ethylene, propylene, n-butylene, isobutylene, tert-butylene, n-hexylene, n-octylene, n-dodecylene, n-octadecylene, n-tetradecylene, n-docosanylene, or else a -C_6H_4-(ortho, meta or para) phenylene radical, or else a -C_6H_4-CH_2- benzylene radical. R'3 is preferentially a C_1-C_4 alkylene radical, optionally substituted by an OH.

R'1 and R'2 are preferably chosen from hydrogen, a methyl, ethyl, propyl, isopropyl, n-butyl, t-butyl, isobutyl, octyl, lauryl or stearyl group; they are preferentially chosen, independently of one another, from H, CH_3 and C_2H_5. When they form a ring with the nitrogen atom, said ring may be a morpholine, piperazine or piperidine ring.

The monomers (II) are cationic monomers, that is to say comprising units able to carry a cationic charge in the pH range of between 3 and 12. These units do not necessarily have a permanent charge regardless of the pH. The cationic unit does not need to be protonated at all of these pHs.

As monomer (II), mention may be made of:

- 2-dimethylaminoethyl (meth)acrylate, diethylaminoethyl (meth)acrylate, morpholinoethyl (meth)acrylate;

CH2=CH-COO-CH2-C(CH3)2-CH2-N(CH3)2

CH2=C(CH3)-COO-C[CH2N(CH3)2]2

The monomer (II) is more preferentially 2-dimethylaminoethyl methacrylate (MADAME).

The (meth)acrylate containing an aromatic group is chosen from the monomers of formula (III): CH2=CH(R6)-COOR7

wherein:

R_6 represents a hydrogen atom or a methyl group;

R_7 denotes a C_6-C_{10} aryl radical.

As monomer (III), mention may be made of benzyl (meth)acrylate or phenyl (meth)acrylate. Benzyl methacrylate is preferably used.

The polymer of the particles may optionally comprise a C_1-C_4 alkyl (meth)acrylate (or monomer e) at an amount ranging from 5 to 60% by weight relative to the total weight of the polymer, when the polymer comprises a monomer (I) and/or a monomer (II).

The C_1-C_4 alkyl (meth)acrylate monomers may be chosen from methyl (meth)acrylate, ethyl (meth)acrylate, n-propyl (meth)acrylate, isopropyl (meth)acrylate, n-butyl (meth)acrylate, tert-butyl (meth)acrylate; and preferably methyl (meth)acrylate or ethyl (meth)acrylate.

According to a first embodiment of the invention, the polymer of the particles essentially consists of a polymer of one or more ethylenically unsaturated acid monomer(s) or the anhydride thereof as described above.

According to a second embodiment of the invention, the polymer of the particles essentially consists of a polymer of one or more ethylenically unsaturated monomer(s) containing a polyethylene glycol chain of formula (I) as described above.

According to a third embodiment, the polymer of the particles essentially consists of a polymer of one or more (meth)acrylate monomer(s) of formula (II) as described above.

According to a fourth embodiment of the invention, the polymer of the particles essentially consists of a polymer of one or more (meth)acrylates containing an aromatic group of formula (III) as described above.

According to a fifth embodiment of the invention, the polymer of the particles essentially consists of a copolymer of ethylenically unsaturated monomer and containing a polyethylene glycol chain of formula (I) and of (meth)acrylate monomer of formula (II) as described above, especially in any proportion, or for example at contents of 40-60% by weight of monomer (I) and 40-60% by weight of monomer (II) relative to the total weight of the polymer.

According to a sixth embodiment of the invention, the polymer of the particles essentially consists of a copolymer of ethylenically unsaturated monomer and containing a polyethylene glycol chain of formula (I), of (meth)acrylate monomer of formula (II), and of (meth)acrylate containing an aromatic group of formula (III) as described above, especially in any proportion, for example at contents of 35-40% by weight of monomer (I), 35-40% by weight of monomer (II) and 20-30% by weight of monomer (III) relative to the total weight of the polymer.

According to a seventh embodiment of the invention, the polymer of the particles essentially consists of a copolymer of (meth)acrylate monomer of formula (II) and from 5 to 60% (for example 40-60%) by weight, relative to the total weight of the polymer, of C_1-C_4 alkyl (meth)acrylate.

Advantageously, the polymer of the particles may be chosen from:
acrylic acid homopolymers,
PEG methacrylate homopolymers,
MADAME homopolymers,
PEG methacrylate/MADAME copolymers,
PEG methacrylate/MADAME/benzyl methacrylate copolymers,
MADAME/methyl methacrylate copolymers,
benzyl methacrylate homopolymers,

and preferably from:
acrylic acid homopolymers,
PEG methacrylate homopolymers,
MADAME homopolymers,

and preferentially PEG methacrylate homopolymers.

Advantageously, the polymer of the particles is a non-crosslinked polymer.

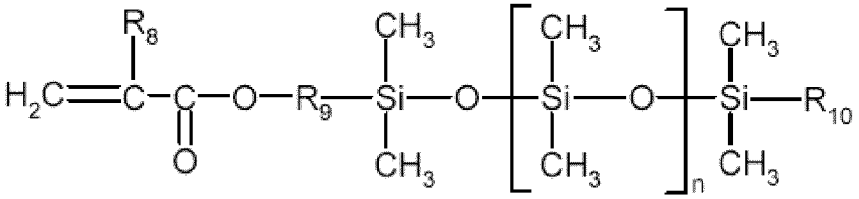
The polymer of the particles of the dispersion preferably has a number-average molecular weight ranging from 2000 to 10 000 000 and preferably ranging from 150 000 to 500 000.

The polymer of the particles is advantageously a film-forming polymer. In the present application, the term “film-forming polymer” means a polymer that is capable of forming, by itself or in the presence of an auxiliary film-forming agent, a continuous and adherent film on a support, especially on keratin materials.

The polymer of the particles may be present in the dispersion in a content ranging from 20% to 60% by weight, relative to the total weight of the dispersion.

The stabilizer is a polymer comprising from 80% to 100% by weight, preferably from 85% to 95% by weight, of silicone macromonomer (IV) as described below and from 0 to 20% by weight, preferably from 5% to 15% by weight, of monomer chosen from the monomers present in the polymer of the particles described above. The stabilizer is preferably a statistical polymer.

The stabilizer comprises a polydimethylsiloxane macromonomer comprising a monomacryloyloxy or monomethacryloyloxy end group of formula (IV) (subsequently referred to as silicone macromonomer) below:



(IV)

wherein:

- R_8 denotes a hydrogen atom or a methyl group; preferably methyl;
- R_9 denotes a linear or branched, preferably linear, divalent hydrocarbon-based group containing from 1 to 10 carbon atoms, preferably containing from 2 to 4 carbon atoms, and optionally containing one or two -O- ether bonds; preferably an ethylene, propylene or butylene group;
- R_{10} denotes a linear or branched alkyl group having from 1 to 10 carbon atoms, especially from 2 to 8 carbon atoms; preferably methyl, ethyl, propyl, butyl or pentyl;
- n denotes an integer ranging from 1 to 300, preferably ranging from 3 to 200 and preferentially ranging from 5 to 100.

Use may in particular be made of monomethacryloyloxypropyl polydimethylsiloxanes such as those sold under the names MCR-M07, MCR-M17, MCR-M11 and MCR-M22 by Gelest Inc or X-22-2475, X-22-2426 and X-22-174DX by Shin Etsu.

According to a first embodiment of the invention, the stabilizer essentially consists of a polymer of silicone macromonomer (IV) and of ethylenically unsaturated acid monomer(s) or the anhydride thereof as described above.

According to a second embodiment of the invention, the stabilizer essentially consists of a polymer of silicone macromonomer (IV) and of ethylenically unsaturated monomer containing a polyethylene glycol chain of formula (I) as described above.

According to a third embodiment, the stabilizer essentially consists of a polymer of silicone macromonomer (IV) and of (meth)acrylate of formula (II) as described above.

According to a fourth embodiment of the invention, the stabilizer essentially consists of a polymer of silicone macromonomer (IV) and of (meth)acrylate containing an aromatic group of formula (III) as described above.

According to a fifth embodiment of the invention, the stabilizer essentially consists of a polymer of silicone macromonomer (IV), of ethylenically unsaturated monomer containing a polyethylene glycol chain of formula (I) and of (meth)acrylate of formula (II) as described above.

According to a sixth embodiment of the invention, the stabilizer essentially consists of a polymer of silicone macromonomer (IV), of ethylenically unsaturated monomer containing a polyethylene glycol chain of formula (I), of (meth)acrylate of formula (II) and of (meth)acrylate containing an aromatic group of formula (III) as described above.

According to a seventh embodiment of the invention, the stabilizer essentially consists of a polymer of silicone macromonomer (IV), of (meth)acrylate of formula (II) and of C_1-C_4 alkyl (meth)acrylate.

A stabilizer having, in addition to the silicone macromonomer (IV), monomers identical to those present in the polymer of the particles, is advantageously used, as illustrated in the examples described below.

Advantageously, the stabilizer is chosen from:
silicone macromonomer (IV) / acrylic acid copolymers
silicone macromonomer (IV) / PEG methacrylate (I) copolymers
silicone macromonomer (IV) / MADAME copolymers
silicone macromonomer (IV) / PEG methacrylate (I) / MADAME copolymers
silicone macromonomer (IV) / PEG methacrylate (I) / MADAME / benzyl methacrylate copolymers
silicone macromonomer (IV) / MADAME / methyl methacrylate copolymers
silicone macromonomer (IV) / benzyl methacrylate copolymers,

and preferably chosen from:
silicone macromonomer (IV) / acrylic acid copolymers
silicone macromonomer (IV) / PEG methacrylate (I) copolymers
silicone macromonomer (IV) / MADAME copolymers

The stabilizing polymer preferably has a number-average molecular weight ranging from 10 000 to 400 000 and preferably ranging from 20 000 to 200 000.

The stabilizer is in contact with the surface of the polymer particles and thus makes it possible to stabilize these particles at the surface in order to keep these particles

in dispersion in the nonaqueous medium of the dispersion. Thus, the polymer particles are surface-stabilized by the stabilizer. The stabilizer is a polymer distinct from the polymer of the particles: the stabilizer does not form a covalent bond with the polymer of the particles.

Advantageously, the combination of the stabilizer + polymer of the particles present in the dispersion comprises from 50% to 90% by weight of silicone macromonomer (IV) and from 60% to 85% by weight of monomers (a) and/or (b) and/or (c) and/or (d) and optionally (e), relative to the total weight of the combination of the stabilizer + polymer of the particles.
Preferentially, the combination of the stabilizer + polymer of the particles present in the dispersion comprises from 10% to 50% by weight of silicone macromonomer (IV) and from 15% to 40% by weight of monomers (a) and/or (b) and/or (c) and/or (d) and optionally (e), relative to the total weight of the combination of the stabilizer + polymer of the particles.

The oily medium of the polymer dispersion comprises a hydrocarbon-based oil.
The hydrocarbon-based oil is an oil that is liquid at room temperature (25°C).

The term “hydrocarbon-based oil” means an oil formed essentially from, or even constituted by, carbon and hydrogen atoms, and optionally oxygen and nitrogen atoms, and not containing any silicon or fluorine atoms. It may contain alcohol, ester, ether, carboxylic acid, amine and/or amide groups.

The hydrocarbon-based oil may be chosen from:

hydrocarbon-based oils having from 8 to 16 carbon atoms, and especially:
- branched C_8-C_{16} alkanes, for instance C_8-C_{16} isoalkanes of petroleum origin (also known as isoparaffins), for instance isododecane (also known as 2,2,4,4,6-pentamethylheptane), isodecane, isohexadecane and, for example, the oils sold under the trade name Isopar or Permethyl,
- linear alkanes, for example such as n-dodecane (C_{12}) and n-tetradecane (C_{14}) sold by Sasol respectively under the references Parafol 12-97 and Parafol 14-97, and also their mixtures, the undecane-tridecane mixture, the mixtures of n-undecane (C_{11}) and of n-tridecane (C_{13}) obtained in examples 1 and 2 of the patent application WO 2008/155059 from Cognis, and their mixtures,

short-chain esters (having from 3 to 8 carbon atoms in total), such as ethyl acetate, methyl acetate, propyl acetate or n-butyl acetate,

- hydrocarbon-based oils of plant origin such as triglycerides constituted of fatty acid esters of glycerol, the fatty acids of which may have chain lengths varying from C_4

to C_{24}, these chains possibly being linear or branched, and saturated or unsaturated; these oils are especially heptanoic or octanoic acid triglycerides, or else wheatgerm oil, sunflower oil, grapeseed oil, sesame oil, corn oil, apricot oil, castor oil, shea oil, avocado oil, olive oil, soybean oil, sweet almond oil, palm oil, rapeseed oil, cotton-seed oil, hazelnut oil, macadamia oil, jojoba oil, alfalfa oil, poppy oil, pumpkin oil, sesame oil, marrow oil, rapeseed oil, blackcurrant oil, evening primrose oil, millet oil, barley oil, quinoa oil, rye oil, safflower oil, candlenut oil, passion-flower oil and musk rose oil; shea butter; or else caprylic/capric acid triglycerides, for instance those sold by the company Stéarineries Dubois or those sold under the names Miglyol 810®, 812® and 818® by Dynamit Nobel;

- synthetic ethers having from 10 to 40 carbon atoms;

- linear or branched hydrocarbons of mineral or synthetic origin, such as petroleum jelly, polydecenes, hydrogenated polyisobutene such as Parleam®, squalane and liquid paraffins, and mixtures thereof,

- synthetic esters such as oils of formula R_1COOR_2 in which R_1 represents a linear or branched fatty acid residue containing from 1 to 40 carbon atoms and R_2 represents an, in particular, branched hydrocarbon-based chain containing from 1 to 40 carbon atoms, on condition that $R_1 + R_2 \geq 10$, for instance purcellin oil (cetostearyl octanoate), isopropyl myristate, isopropyl palmitate, C_{12} to C_{15} alcohol benzoates, hexyl laurate, diisopropyl adipate, isononyl isononanoate, 2-ethylhexyl palmitate, isostearyl isostearate, 2-hexyldecyl laurate, 2-octyldecyl palmitate, 2-octyldodecyl myristate, alcohol or polyalcohol heptanoates, octanoates, decanoates or ricinoleates such as propylene glycol dioctanoate; hydroxylated esters such as isostearyl lactate, diisostearyl malate and 2-octyldodecyl lactate; polyol esters and pentaerythritol esters,

- fatty alcohols that are liquid at room temperature, with a branched and/or unsaturated carbon-based chain having from 12 to 26 carbon atoms, for instance octyldodecanol, isostearyl alcohol, oleyl alcohol, 2-hexyldecanol, 2-butyloctanol and 2-undecylpentadecanol.

Advantageously, the hydrocarbon-based oil is apolar (thus formed solely from carbon and hydrogen atoms).

The hydrocarbon-based oil is preferably chosen from hydrocarbon-based oils having from 8 to 16 carbon atoms, in particular the apolar oils described previously.

Preferentially, the hydrocarbon-based oil is isododecane.

The polymer particles of the dispersion preferably have an average size, in particular a number-average size, ranging from 50 to 500 nm, especially ranging from 75 to 400 nm and better still ranging from 100 to 250 nm.

In general, the dispersion according to the invention may be prepared in the following manner, which is given as an example.
The polymerization may be performed in dispersion, i.e. by precipitation of the polymer during formation, with protection of the formed particles with a stabilizer.
In a first step, the stabilizing polymer is prepared by mixing the constituent monomer(s) of the stabilizing polymer with a free-radical initiator, in a solvent known as the synthesis solvent, and by polymerizing these monomers. In a second step, the constituent monomer(s) of the polymer of the particles are added to the stabilizing polymer formed and polymerization of these added monomers is performed in the presence of the free-radical initiator.

When the nonaqueous medium is a nonvolatile hydrocarbon-based oil, the polymerization may be performed in an apolar organic solvent (synthesis solvent), followed by adding the nonvolatile hydrocarbon-based oil (which should be miscible with said synthesis solvent) and selectively distilling off the synthesis solvent.
A synthesis solvent which is such that the monomers of the stabilizing polymer and the free-radical initiator are soluble therein, and the polymer particles obtained are insoluble therein, so that they precipitate therein during their formation, is thus chosen.
In particular, the synthesis solvent may be chosen from alkanes such as heptane or cyclohexane.

When the nonaqueous medium is a volatile hydrocarbon-based oil, the polymerization may be performed directly in said oil, which thus also acts as synthesis solvent. The monomers should also be soluble therein, as should the free-radical initiator, and the polymer of the particles which is obtained should be insoluble therein.

The monomers are preferably present in the synthesis solvent, before polymerization, in a proportion of 5-20% by weight. The total amount of the monomers may be present in the solvent before the start of the reaction, or part of the monomers may be added gradually as the polymerization reaction proceeds.
The free-radical initiator may especially be azobisisobutyronitrile or tert-butyl peroxy-2-ethylhexanoate.
The polymerization may be performed at a temperature ranging from 70 to 110°C.

The polymer particles are surface-stabilized, when they are formed during the polymerization, by means of the stabilizer.

The stabilization may be performed by any known means, and in particular by direct addition of the stabilizer, during the polymerization.
The stabilizer is preferably also present in the mixture before polymerization of the monomers of the polymer of the particles. However, it is also possible to add it continuously, especially when the monomers of the polymer of the particles are also added continuously.

From 10% to 30% by weight and preferably from 15% to 25% by weight of stabilizer may be used relative to the total weight of monomers used (stabilizer + polymer of the particles).

The polymer dispersion obtained according to the invention may be used in a composition comprising a physiologically acceptable medium, in particular in a cosmetic composition.

The term "physiologically acceptable medium" means a medium that is compatible with human keratin materials, for instance the skin, the lips, the nails, the eyelashes, the eyebrows or the hair.

The term "cosmetic composition" means a composition that is compatible with keratin materials, which has a pleasant colour, odour and feel and which does not cause unacceptable discomfort (stinging, tautness or redness) liable to discourage the consumer from using it.

The term "keratin materials" means the skin (body, face, contour of the eyes, scalp), head hair, eyelashes, eyebrows, bodily hairs, nails or lips.

The composition according to the invention may comprise a cosmetic additive chosen from water, fragrances, preserving agents, fillers, dyestuffs, UV-screening agents, oils, waxes, surfactants, moisturizers, vitamins, ceramides, antioxidants, free-radical scavengers, polymers and thickeners.

In particular, the composition may comprise a silicone oil, which may be chosen from linear or cyclic volatile silicone oils, especially having from 2 to 10 silicon atoms, preferably from 2 to 7 silicon atoms, these silicones optionally comprising alkyl or alkoxy groups having from 1 to 10 carbon atoms, for instance octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, dodecamethylcyclohexasiloxane, heptamethylhexyltrisiloxane, heptamethyloctyltrisiloxane, hexamethyldisiloxane, octamethyltrisiloxane, decamethyltetrasiloxane or dodecamethylpentasiloxane;
polydimethylsiloxanes (PDMSs) comprising alkyl or alkoxy groups, that are pendent and/or at the end of a silicone chain, the groups each having from 2 to 60 carbon atoms, especially (C_2-C_{60})alkyl dimethicones; (C_2-C_{60})alkyl methicones; phenyl silicones, for instance phenyl

trimethicones, phenyl dimethicones, phenyltrimethylsiloxydiphenylsiloxanes, diphenyl dimethicones, trimethylsiloxyphenyl dimethicone and diphenylmethyldiphenyltrisiloxanes; and mixtures thereof.

The silicone oil may be present in the composition according to the invention in a content ranging from 0.1% to 60% by weight, relative to the total weight of the composition, preferably ranging from 1% to 50% by weight and better still ranging from 1% to 40% by weight.

The composition according to the invention may comprise the polymer of the dispersion in a content ranging from 1% to 50% by weight and preferably ranging from 10% to 45% by weight relative to the total weight of the composition.

Advantageously, the composition according to the invention is a makeup composition, in particular a lip makeup composition, a mascara, an eyeliner, an eyeshadow or a foundation.

According to one embodiment, the composition according to the invention is an anhydrous composition. The term "anhydrous composition" means a composition containing less than 2% by weight of water, or even less than 0.5% of water, and being especially free of water. If appropriate, such small amounts of water may especially be introduced by ingredients of the composition which may contain residual amounts thereof.

The invention is illustrated in greater detail in the following examples. The amounts are expressed as weight percentages.

Evaluation of the cosmetic properties of the oily dispersions:

The oily dispersion to be evaluated was placed on a contrast card (for example that sold under the reference Byko-charts by the company Byk-Gardner) and the film deposited was dried for 24 hours at room temperature (25°C). The dry film has a thickness of about 50 µm.

The resistance of the film to the fatty substance was determined by depositing on the dry film three drops of olive oil onto the black part of the contrast card. The drops were left in contact with the dry film for 10 minutes, 30 minutes and 60 minutes, respectively, and the oil drop was then wiped and the appearance of the area of the film that was in contact with the oil was observed. If the film was damaged by the oil drop, the polymer film is considered as not being resistant to olive oil.

All the percentages of reagents described in the examples are weight percentages.

Example 1

In a first step, 96 g of isododecane, 4 g of acrylic acid, 70 g of polydimethylsiloxane methacrylate (X-22-2426 from Shin-Etsu) and 0.74 g of tert-butyl peroxy-2-ethylhexanoate (Trigonox 21S from Akzo) were placed in a reactor. The acrylic acid / PDMS methacrylate weight ratio is 6 / 94.
The mixture was heated to 90°C under argon with stirring.
After 2 hours of reaction, 80 g of isododecane were added to the reactor feedstock and the mixture was heated to 90°C.
In a second step, a mixture of 159 g of acrylic acid, 159 g of isododecane and 1.96 g of Trigonox 21S were run in over one hour, and the mixture was left to react for 7 hours. 0.4 litres of isododecane were then added and part of the isododecane was evaporated off to obtain a solids content of 40% by weight.
A dispersion of acrylic acid homopolymer particles stabilized with a statistical copolymer stabilizer containing 6% by weight of acrylic acid and 94% of PDMS methacrylate in isododecane was obtained.
The oily dispersion contains in total (stabilizer + particles) 70% acrylic acid and 30% PDMS methacrylate.

The particles of the polymer of the dispersion have a number-average size of between about 150 nm and 250 nm.

The dispersion is stable after storage for 7 days at room temperature (25°C).

Example 2

A dispersion of polymer particles in isododecane was prepared according to the procedure of example 1, using:
Step 1: 4 g of polyethylene glycol methacrylate (molar mass 500 g/mol), 50 g of polydimethylsiloxane methacrylate (X-22-2426 from Shin-Etsu), 0.54 g of Trigonox 21S, 80 g of an isododecane/ethyl acetate mixture (70/30 vol/vol); then addition, after reaction, of 96 g of isododecane/ethyl acetate mixture (70/30 vol/vol).
Step 2: 196 g of polyethylene glycol methacrylate (molar mass 500 g/mol), 1.96 g of Trigonox 21S, 196 g of an isododecane/ethyl acetate mixture (70/30 vol/vol). After reaction, addition of 0.4 litre of an isododecane/ethyl acetate mixture (70/30 vol/vol) and total evaporation of the ethyl acetate and partial evaporation of the isododecane to obtain a solids content of 40% by weight.

A dispersion in isododecane of PEG methacrylate homopolymer particles stabilized with a PEG acrylate/PDMS methacrylate (7/93) statistical copolymer was obtained.

The oily dispersion contains in total (stabilizer + particles) 20% PDMS methacrylate and 80% PEG methacrylate.

The particles of the polymer of the dispersion have a number-average size of between about 150 nm and 250 nm.

The dispersion is stable after storage for 7 days at room temperature (25°C).

Example 3

A dispersion of polymer particles in isododecane was prepared according to the procedure of example 1, using:
Step 1: 5 g of 2-dimethylaminoethyl methacrylate (MADAME), 50 g of polydimethylsiloxane methacrylate (X-22-2426 from Shin-Etsu), 0.54 g of Trigonox 21S, 800 g of isododecane; followed by addition, after reaction, of 96 g of isododecane.
Step 2: 196 g of MADAME, 1.96 g of Trigonox 21S, 196 g of isododecane. After reaction, addition of 0.4 litre of isododecane and evaporation to obtain a solids content of 44% by weight.

A dispersion in isododecane of 2-dimethylaminoethyl methacrylate homopolymer particles stabilized with a 2-dimethylaminoethyl methacrylate/PDMS methacrylate (7/93) statistical copolymer was obtained.

The oily dispersion contains in total (stabilizer + particles) 20% 2-dimethylaminoethyl methacrylate and 80% PDMS methacrylate.

The particles of the polymer of the dispersion have a number-average size of between about 150 nm and 250 nm.

The dispersion is stable after storage for 7 days at room temperature (25°C).

Example 4

A dispersion of polymer particles in isododecane was prepared according to the procedure of example 1, using:
Step 1: 50 g of polydimethylsiloxane methacrylate (X-22-2426 from Shin-Etsu), 2 g of polyethylene glycol methacrylate (molar mass 500 g/mol), 2 g of 2-dimethylaminoethyl methacrylate (MADAME), 0.54 g of Trigonox 21S, 96 g of an isododecane/ethyl acetate mixture (70/30 weight/weight); then addition, after reaction, of 96 g of isododecane/ethyl acetate mixture (70/30 weight/weight).
Step 2: 98 g of polyethylene glycol methacrylate, 98 g of MADAME, 1.96 g of Trigonox 21S, 196 g of an isododecane/ethyl acetate mixture (70/30 weight/weight). After reaction, addition of 0.3 litre of an isododecane/ethyl acetate mixture (60/40 weight/weight) and total evaporation of the ethyl acetate and partial evaporation of the isododecane to obtain a solids content of 40% by weight.

A dispersion in isododecane of PEG methacrylate/MADAME copolymer particles (50/50) stabilized with a PDMS methacrylate/PEG methacrylate/MADAME (93/3.5/3.5) statistical copolymer was obtained.

The oily dispersion contains in total (stabilizer + particles) 20% PDMS methacrylate, 40% MADAME and 40% PEG methacrylate.

The particles of the polymer of the dispersion have a number-average size of between about 150 nm and 250 nm.

The dispersion is stable after storage for 7 days at room temperature (25°C).

Example 5

A dispersion of polymer particles in isododecane was prepared according to the procedure of example 1, using:
Step 1: 50 g of polydimethylsiloxane methacrylate (X-22-2426 from Shin-Etsu), 1.5 g of MADAME, 1.5 g of polyethylene glycol methacrylate (molar mass 500 g/mol), 1 g of benzyl methacrylate, 0.54 g of Trigonox 21S, 80 g of isododecane; then addition, after reaction, of 96 g of isododecane.
Step 2: 73.5 g of MADAME, 73.5 g of PEG methacrylate, 49 g of benzyl methacrylate, 1.96 g of Trigonox 21S, 196 g of isododecane. After reaction, addition of 0.4 litre of isododecane and evaporation to obtain a solids content of 52% by weight.

A dispersion in isododecane of MADAME/PEG methacrylate/benzyl methacrylate copolymer particles (37.5/37.5/25) stabilized with a PDMS methacrylate/MADAME/PEG methacrylate/benzyl methacrylate (92.6/2.8/2.8/1.8) statistical copolymer was obtained.

The oily dispersion contains in total (stabilizer + particles) 20% PDMS methacrylate, 30% MADAME, 30% PEG methacrylate and 20% benzyl methacrylate.

The particles of the polymer of the dispersion have a number-average size of between about 150 nm and 250 nm.

The dispersion is stable after storage for 7 days at room temperature (25°C).

Example 6

A dispersion of polymer particles in isododecane was prepared according to the procedure of example 1, using:
Step 1: 50 g of polydimethylsiloxane methacrylate (X-22-2426 from Shin-Etsu), 2 g of MADAME, 2 g of methyl methacrylate, 0.54 g of Trigonox 21S, 80 g of isododecane; then addition, after reaction, of 96 g of isododecane.
Step 2: 98 g of MADAME, 98 g of methyl methacrylate, 1.96 g of Trigonox 21S, 196 g of isododecane. After reaction, addition of 0.4 litre of isododecane and evaporation to obtain a solids content of 40% by weight.

A dispersion in isododecane of MADAME/methyl methacrylate copolymer particles (50/50) stabilized with a PDMS methacrylate/MADAME/methyl methacrylate (93/3.5/3.5) statistical copolymer was obtained.

The oily dispersion contains in total (stabilizer + particles) 20% PDMS methacrylate, 40% MADAME and 40% methyl methacrylate.

The particles of the polymer of the dispersion have a number-average size of between about 150 nm and 250 nm.

The dispersion is stable after storage for 7 days at room temperature (25°C).

Example 7:
A dispersion of polymer particles in isododecane was prepared according to the procedure of example 1, using:
Step 1: 50 g of polydimethylsiloxane methacrylate (X-22-2426 from Shin-Etsu), 4 g of benzyl methacrylate, 0.54 g of Trigonox 21S, 80 g of isododecane; then addition, after reaction, of 96 g of isododecane.
Step 2: 196 g of benzyl methacrylate, 1.96 g of Trigonox 21S, 196 g of isododecane. After reaction, addition of 0.4 litre of isododecane and evaporation to obtain a solids content of 54% by weight.

A dispersion in isododecane of benzyl methacrylate homopolymer particles stabilized with a PDMS methacrylate/benzyl methacrylate (93/7) statistical copolymer was obtained.

The oily dispersion contains in total (stabilizer + particles) 80% benzyl methacrylate and 20% PDMS methacrylate.

The particles of the polymer of the dispersion have a number-average size of between about 150 nm and 250 nm.

The dispersion is stable after storage for 7 days at room temperature (25°C).

Example 8:
Study of the compatibility with silicone oils:
The compatibility of the polymer particle dispersions prepared was evaluated by adding to the dispersion 5 different silicone oils (silicone 1 to 5) and by observing whether or not the mixture obtained is stable (homogeneous, scored +, or heterogeneous, scored -, mixture).
Silicone 1: Polyphenyltrimethylsiloxydimethylsiloxane (Belsil® PDM 1000 from Wacker) (INCI name: Trimethylsiloxyphenyl dimethicone)
Silicone 2: cyclohexadimethylsiloxane
Silicone 3: 3-octylheptamethyltrisiloxane (Dow Corning FZ-3196 from Dow Corning)
Silicone 4: polydimethylsiloxane 5 cSt (Xiameter PMX-200 Silicone Fluid 5CS from Dow Corning)
Silicone 5: dodecamethylpentasiloxane

The following results were obtained:

Example	HC/Si Ratio	S1	S2	S3	S4	S5
1	75/25	+	+	+	+	+
	50/50	+	+	+	+	+
	25/75	+	+	+	+	+
2	75/25	+	+	+	+	+
	50/50	+	+	+	+	+
	25/75	+	+	+	+	+
3	75/25	+	+	+	+	+
	50/50	+	+	+	+	+
	25/75	+	+	+	+	+
4	75/25	+	+	+	+	+
	50/50	+	+	+	+	+
	25/75	+	+	+	+	+
5	75/25	+	+	+	+	+
	50/50	+	+	+	+	+
	25/75	+	+	+	+	+
6	75/25	+	+	+	+	+
	50/50	+	+	+	+	+
	25/75	+	+	+	+	+
7	75/25	+	+	+	+	+
	50/50	+	+	+	+	+
	25/75	+	+	+	+	+

HC/Si ratio: weight ratio of hydrocarbon-based oil (isododecane)/silicone oil present in the polymer particle dispersion.

The results obtained show that the dispersions of examples 1 to 7 have good compatibility with the five silicone oils in the three oil ratios.

The oily dispersion contains in total (stabilizer + particles) 20% of isobornyl acrylate, 78% of methyl acrylate and 2% of PDMS methacrylate.

Example 9:

A skin makeup composition comprising the ingredients below is prepared:

Polymer dispersion of Example 1	60%
Dodecamethylpentasiloxane	35%
Iron oxides	5%

The composition applied to the skin makes it possible to obtain a film of makeup.

The polymer dispersion of Example 1 may be replaced with the dispersions of Examples 2 to 7.

Example 10:

A lip makeup composition comprising the ingredients below is prepared:

Polymer dispersion of Example 1	84%
Polyphenyltrimethylsiloxydimethylsiloxane (Belsil® PDM 1000 from Wacker)	15%
Red 7	1%

The composition applied to the lips makes it possible to obtain a film of makeup.

The polymer dispersion of Example 1 may be replaced with the dispersions of Examples 2 to 7.

Example 11:

An eyelash makeup composition comprising the ingredients below is prepared:

Polymer dispersion of Example 1	60%
Isododecane	20%
Black iron oxides	20%

The composition applied to the eyelashes makes it possible to obtain a film of makeup.

The polymer dispersion of Example 1 may be replaced with the dispersions of Examples 2 to 7.

Example 12 :

Evaluation of the cosmetic properties of the oily dispersions:

The oily dispersion to be evaluated was placed on a contrast card (for example that sold under the reference Byko-charts by the company Byk-Gardner) and the film deposited was dried for 24 hours at room temperature (25°C). The dry film has a thickness of about 50 µm.

The gloss of the film was measured using a glossmeter (three angles Refo 3 / Refo 3D from Labomat) at an angle of 20°.

The resistance of the film to the fatty substance was determined by depositing on the dry film three drops of olive oil onto the black part of the contrast card. The drops were left in contact with the dry film for 10 minutes, 30 minutes and 60 minutes, respectively, and the oil drop was then wiped and the appearance of the area of the film that was in contact with the oil was observed. If the film was damaged by the oil drop, the polymer film is considered as not being resistant to olive oil.

The same test have been conducted with water for evaluating the water resistance of the film.

The following results were obtained :

Example of oily dispersion	Gloss at 20 °	Resistance to fatty substances	Resistance to water
1	50	yes	yes
2	60	yes	yes
3	62	yes	yes
4	59	yes	yes
5	65	yes	yes
6	-	yes	yes
7	-	yes	yes

Example 13 :

A hair conditioning composition is prepared :

Polymer dispersion of Example 2	20 %
Dodecamethylpentasiloxane	80 %

The composition applied to the hairs makes it possible to obtain conditioned hairs.

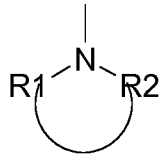
CLAIMS

1. Dispersion of particles of at least one polymer stabilized by a stabilizer in a nonaqueous medium containing at least one hydrocarbon-based oil,
the polymer of the particles being a polymer comprising one or more monomers chosen from:
(a) ethylenically unsaturated acid monomers or the anhydride thereof;
(b) ethylenically unsaturated monomers containing a polyethylene glycol chain of formula (I):

$$CH_2=C(R_1)COO-(CH_2-CH_2-O)n-R_2 \quad (I)$$

wherein:
- R_1 is a hydrogen atom or a methyl radical;
- n is an integer between 2 and 50;
- R_3 is a hydrogen atom or a linear, branched or cyclic, saturated or unsaturated, optionally aromatic carbon-based radical, comprising 1 to 30 carbon atoms, which may comprise 1 to 4 non-adjacent heteroatoms chosen from O or S or an -NR'- group, R' denoting H or a C_1-C_4 alkyl group,

(c) (meth)acrylates of formula (II):
$CH_2=C(R)-COO-R'3-NR'_1R'_2$ (II)
wherein:
- R represents a hydrogen atom or a methyl group;
- R'_3 is a linear, branched or cyclic, saturated or unsaturated, optionally aromatic divalent hydrocarbon-based radical, of 1 to 30 carbon atoms, which may comprise 1 to 6 heteroatoms chosen from O, N, and S;
- R'1 and R'2 represent, independently of each other:
(i) a hydrogen atom,
(ii) a linear, branched or cyclic, saturated or unsaturated, optionally aromatic alkyl group, comprising from 1 to 18 carbon atoms, especially from 1 to 12 carbon atoms, which may comprise 1 to 10 heteroatoms chosen from O, N, and S;
(iii) R1 and R2 possibly forming, with the nitrogen atom, a ring of formula:



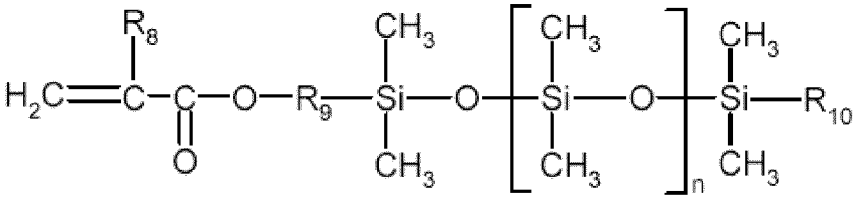
which is saturated or unsaturated and optionally aromatic, said ring comprising 5 to 6 atoms (forming the ring) and especially 3 to 6 carbon atoms, said ring possibly being interrupted by 1 to 3 divalent groups chosen from -O-, -S- and -NH- and/or substituted by a group =O.

(d) (meth)acrylates containing an aromatic group of formula (III) $CH_2=CH(R_6)-COOR_7$
wherein: 7

R_6 represents a hydrogen atom or a methyl group;
R_7 denotes a C_6-C_{10} aryl radical.

(e) the polymer of the particles possibly optionally comprising a C_1-C_4 alkyl (meth)acrylate (or monomer e) at an amount ranging from 5 to 60% by weight relative to the total weight of the polymer, when the polymer comprises a monomer (I) and/or a monomer (II);

the stabilizer being a polymer comprising:
from 80% to 100% by weight, relative to the total weight of the stabilizer, of a silicone macromonomer (IV):



(IV)

wherein:
- R_8 denotes a hydrogen atom or a methyl group; preferably methyl;
- R_9 denotes a linear or branched, preferably linear, divalent hydrocarbon-based group having from 1 to 10 carbon atoms, preferably having from 2 to 4 carbon atoms, and optionally containing one or two -O- ether bonds; preferably an ethylene, propylene or butylene group;
- R_{10} denotes a linear or branched alkyl group having from 1 to 10 carbon atoms, especially from 2 to 8 carbon atoms; preferably methyl, ethyl, propyl, butyl or pentyl;
- n denotes an integer ranging from 1 to 300, preferably ranging from 3 to 200 and preferentially ranging from 5 to 100;
and from 0 to 20% by weight of monomer chosen from the monomers present in the polymer of said particles.

2. Dispersion according to Claim 1, characterized in that the ethylenically unsaturated acid monomer is chosen from (meth)acrylic acid, preferably acrylic acid.

3. Dispersion according to one of the preceding claims, characterized in that the monomer (I) is chosen from:
- poly(ethylene glycol) (meth)acrylate in which R_1 is H or methyl; R_2= H;
- methylpoly(ethylene glycol) (meth)acrylate, also known as methoxypoly(ethylene glycol) (meth)acrylate, in which R_1 is H or methyl and R_2 = methyl.

4. Dispersion according to one of the preceding claims, characterized in that the monomer (II) is 2-dimethylaminoethyl methacrylate (MADAME).

5. Dispersion according to one of the preceding claims, characterized in that the monomer (III) is benzyl methacrylate.

6. Dispersion according to one of the preceding claims, characterized in that the polymer of the particles is chosen from:
acrylic acid homopolymers,
PEG methacrylate homopolymers,
MADAME homopolymers,
PEG methacrylate/MADAME copolymers,
PEG methacrylate/MADAME/benzyl methacrylate copolymers,
MADAME/methyl methacrylate copolymers,
benzyl methacrylate homopolymers,

and preferably from:
acrylic acid homopolymers,
PEG methacrylate homopolymers,
MADAME homopolymers,

and preferentially PEG methacrylate homopolymers.

7. Dispersion according to one of the preceding claims, characterized in that the polymer of the particles is present in a content ranging from 20% to 60% by weight, relative to the total weight of the dispersion.

8. Dispersion according to one of the preceding claims, characterized in that the polymer particles have an average size ranging from 50 to 500 nm, especially ranging from 75 to 400 nm and better still ranging from 100 to 250 nm.

9. Dispersion according to one of the preceding claims, characterized in that the stabilizer is a polymer comprising from
85 to 95% by weight of silicone macromonomer (IV) and from 5 to 15% by weight of monomer chosen from the monomers present in the polymer of the particles.

10. Dispersion according to one of the preceding claims, characterized in that the stabilizer is a statistical polymer.

11. Dispersion according to one of the preceding claims, characterized in that the stabilizer is chosen from:
silicone macromonomer (IV) / acrylic acid copolymers
silicone macromonomer (IV) / PEG methacrylate (I) copolymers
silicone macromonomer (IV) / MADAME copolymers
silicone macromonomer (IV) / PEG methacrylate (I) / MADAME copolymers
silicone macromonomer (IV) / PEG methacrylate (I) / MADAME / benzyl methacrylate copolymers
silicone macromonomer (IV) / MADAME / methyl methacrylate copolymers
silicone macromonomer (IV) / benzyl methacrylate copolymers,

and preferably chosen from:
silicone macromonomer (IV) / acrylic acid copolymers
silicone macromonomer (IV) / PEG methacrylate (I) copolymers
silicone macromonomer (IV) / MADAME copolymers

12. Dispersion according to the preceding claim, characterized in that the combination of the stabilizer + polymer of the particles present in the dispersion comprises from 50% to 90% by weight of silicone macromonomer (IV) and from 60% to 85% by weight of monomers (a) and/or (b) and/or (c) and/or (d) and optionally (e), relative to the total weight of the combination of the stabilizer + polymer of the particles; preferentially, the combination of the stabilizer + polymer of the particles present in the dispersion comprises from 10% to 50% by weight of silicone macromonomer (IV) and from 15% to 40% by weight of monomers (a) and/or (b) and/or (c) and/or (d) and optionally (e), relative to the total weight of the combination of the stabilizer + polymer of the particles.

13. Dispersion according to one of the preceding claims, characterized in that the hydrocarbon-based oil is chosen from hydrocarbon-based oils, which are preferably apolar, containing from 8 to 16 carbon atoms.

14. Dispersion according to one of the preceding claims, characterized in that the hydrocarbon-based oil is isododecane.

15. Dispersion according to one of the preceding claims, characterized in that the polymer of the particles is present in the dispersion in a content ranging from 20% to 60% by weight, relative to the total weight of the dispersion.

16. Composition comprising, in a physiologically acceptable medium, a polymer dispersion according to one of the preceding claims.

17. Composition according to the preceding claim, characterized in that it comprises a cosmetic additive chosen from water, fragrances, preserving agents, fillers, dyestuffs, UV-screening agents, oils, waxes, surfactants, moisturizers, vitamins, ceramides, antioxidants, free-radical scavengers, polymers and thickeners.

18. Composition acording to either of Claims 16 and 17, characterized in that it comprises a silicone oil, chosen especially from linear or cyclic volatile silicone oils, especially having from 2 to 10 silicon atoms, preferably from 2 to 7 silicon atoms, these silicones optionally comprising alkyl or alkoxy groups having from 1 to 10 carbon atoms, for instance octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane,

dodecamethylcyclohexasiloxane, heptamethylhexyltrisiloxane, heptamethyloctyltrisiloxane, hexamethyldisiloxane, octamethyltrisiloxane, decamethyltetrasiloxane or dodecamethylpentasiloxane;
polydimethylsiloxanes (PDMSs) comprising alkyl or alkoxy groups, that are pendent and/or at the end of a silicone chain, the groups each having from 2 to 60 carbon atoms, especially (C_2-C_{60})alkyl dimethicones; (C_2-C_{60})alkyl methicones; phenyl silicones, for instance phenyl trimethicones, phenyl dimethicones, phenyltrimethylsiloxydiphenylsiloxanes, diphenyl dimethicones, trimethylsiloxyphenyl dimethicone and diphenylmethyldiphenyltrisiloxanes;
and mixtures thereof.

19. Composition according to the preceding claim, characterized in that the silicone oil is present in a content ranging from 0.1% to 60% by weight, relative to the total weight of the composition, preferably ranging from 1% to 50% by weight, and better still ranging from 1% to 40% by weight.

20. Nontherapeutic cosmetic process for treating keratin materials, comprising the application to the keratin materials of a composition according to either of Claims 16 and 17, in particular for caring for or making up keratin materials.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/065260

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61Q1/02 A61Q1/06 A61Q1/10 A61K8/81 A61K8/04
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61Q A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 428 843 A1 (OREAL [FR]) 16 June 2004 (2004-06-16) paragraphs [0005] - [0011], [0025] - [0034], [0042] - [0047]; claims; examples 1-5, 7 -----	1-20
X	FR 2 848 558 A1 (OREAL [FR]) 18 June 2004 (2004-06-18) page 2, line 28 - page 3, line 3; claims; examples 3,6 page 13, lines 4-24 -----	1-20
Y	WO 2004/055076 A2 (OREAL [FR]; CASSIN GUILLAUME [FR]) 1 July 2004 (2004-07-01) claims; examples 11-16 ----- -/--	1-20

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
4 August 2017	21/08/2017

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Mitchell, Gemma

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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/065260

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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