CLAIMS

1- A process for the preparation of a core-shell microcapsule slurry comprising the following steps:

a) adding at least one polyfunctional monomer in a hydrophobic material, preferably a perfume, to form an oil phase;

b) preparing a dispersing phase, wherein the dispersing phase is not miscible with the oil phase;

c) adding the oil phase into the dispersing phase to form a two-phase dispersion;

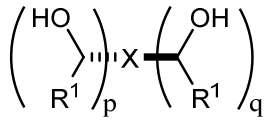
d) optionally, adding a reactant to the dispersion obtained in step c); and

e) performing a curing step to form core-shell microcapsules in the form of a slurry,

wherein a stabilizer is added in step a) and/or step b), and

wherein at least one cleavable multi-alcohol is added in step a) and/or in step b) and/or in step c) and/or in step d),

wherein the cleavable multi-alcohol has the following formula (I)



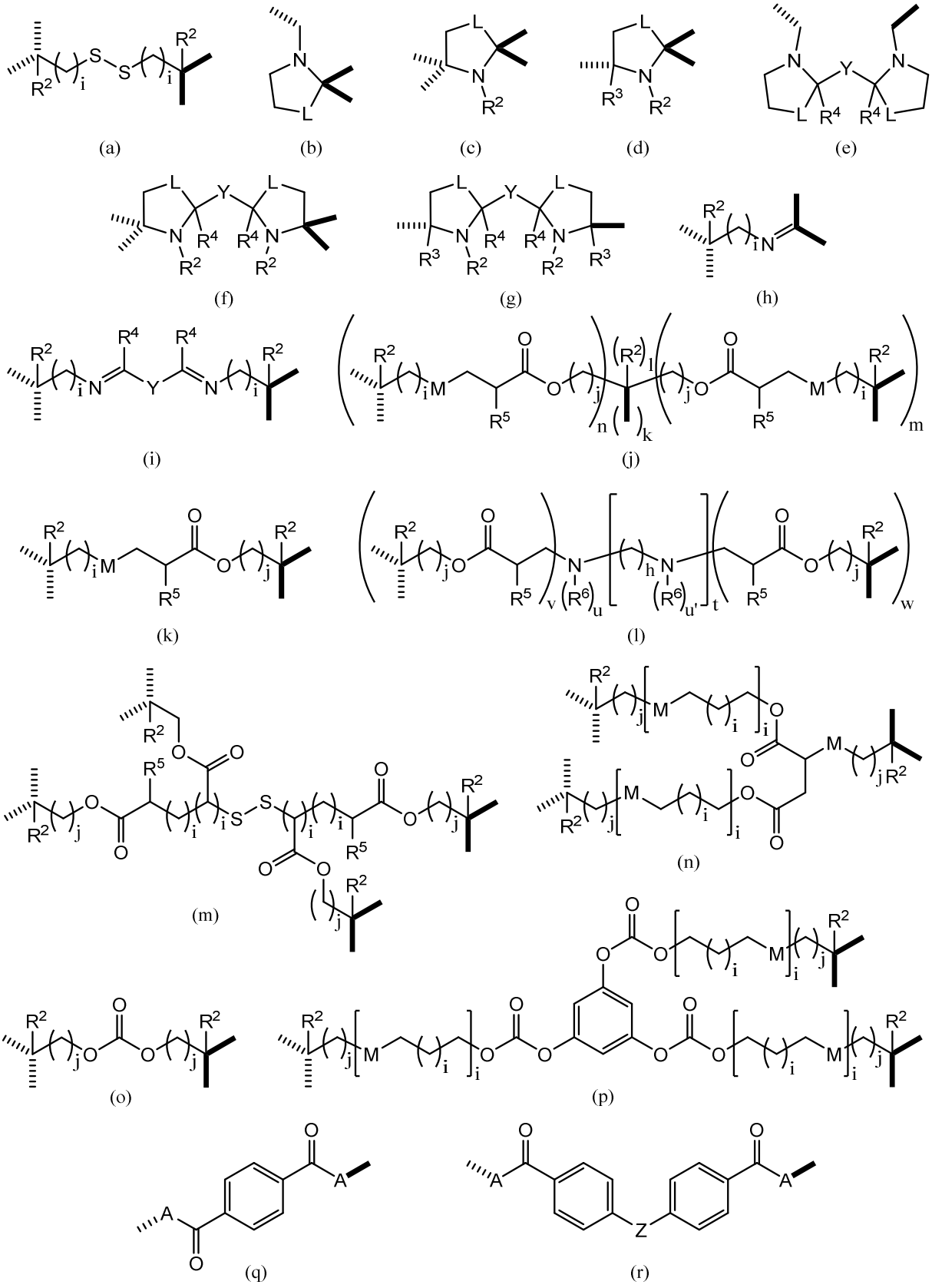
(I)

wherein each R^1 is independently H or CH_2OH and wherein p and q are integers varying between 1 and 3, preferably p and q are either 1 or 2, and

wherein X is a C_2 to C_{30} hydrocarbon group, possibly comprising one to ten heteroatoms, selected from O, S and N to form ether, ester, carboxylic acid, aldehyde, ketone, alcohol, thiol, disulfide, thioether, thioester, carbamate, amide, oxime, imine, amine or nitrile functional groups, and

wherein the cleavable multi-alcohol is not trimethylol propane, and

wherein X is selected from the group consisting of



with L being a O or a S atom or a NH group, preferably a O atom, M being a S atom or a NR^6 group, preferably a S atom, Y being a CH_2, a CH_2-CH_2 or a phenyl group, Z being a $O(CH_2)_xO$ or a $(CH_2)_x$ group with x being an integer varying between 1 and 4, and A being a $COOCH_2(CR^2R^2)_i$, $CHR^2OCH_2(CR^2R^2)_i$ or $(CR^2R^2)(CHR^2)_x$ group,

with each R^2 being independently a H, CH_3, CH_2CH_3, CH_2OH or CH_2CH_2OH group and each R^3 being independently a CH_3 or CH_2CH_3 group,

with R^4 being either H or CH_3 or, if Y is not phenyl group, then two R^4 taken together may represent a CH_2 or a CH_2-CH_2 group,

with R^5 being either H or CH_3,

with R^6 being either H, a C_1-C_6 alkyl group or a CH_2-CH_2-$(CH_2)_j$-OH group, if t = 1 two R^6 taken together might form a CH_2-CH_2-$(CH_2)_i$ group,

with h being an integer varying between 1 and 6, each i being individually of each other 0 or 1, each j being individually of each other an integer varying between 0 and 2, and

with k and l being integers varying between 0 and 2, and m and n being 1 or 2, with the proviso that k + l + m + n = 4,

with t, u and u' being 0 or 1, v and w being 1 or 2, and with the proviso that u + v + w = 3 (if t = 0) or u + u' + v + w = 4 (if t = 1), and

wherein the hatched and the bold lines are either linked to a hydrogen atom or indicate the bond between said X and the $(CHR^1OH)_p$ (hatched line) or $(CHR^1OH)_q$ (bold line) groups of the multi-alcohol of formula (I), with the proviso that at least one hatched and at least one bold line of X are linked to a CHR^1OH group.

2- The process according to claim 1, wherein X is a compound chosen from the group consisting of disulfides, oxazolidines, imines, 1,4-addition products, carbonates and aryl ketone derivatives.

3- The process according to claim 1 or claim 2, wherein the cleavable multi-alcohol is a compound chosen from the group consisting of:

- disulfides chosen from the group consisting of 2,2'-disulfanediylbis(ethan-1-ol), 2,2'-disulfanediylbis(propane-1,3-diol), 3-(2,3-dihydroxypropyldisulfanyl)propane-1,2-diol, 2,2'-(disulfanediylbis(methylene))bis(2-methylpropane-1,3-diol) or 2,2'-

(disulfanediylbis(methylene))bis(2-ethylpropane-1,3-diol), bis(3-hydroxy-2-(hydroxymethyl)-2-methylpropyl) 3,3'-disulfanediyldipropionate, tetrakis(2-hydroxyethyl) 2,2'-disulfanediyldisuccinate, and/or

- oxazolidines chosen from the group consisting of (3-(2-hydroxyethyl)oxazolidine-2,2-diyl)dimethanol, oxazolidine-2,2,4-triyltrimethanol, 2,2'-(ethane-1,2-diylbis(2-methyloxazolidine-2,3-diyl))bis(ethan-1-ol), (ethane-1,2-diylbis(2-methyloxazolidine-2,4,4-triyl))tetramethanol, 2,2'-(1,4-phenylenebis(oxazolidine-2,3-diyl))bis(ethan-1-ol), 2,2'-(furan-2,5-diylbis(oxazolidine-2,3-diyl))bis(ethan-1-ol), 2,2'-(cyclohexane-1,4-diylbis(oxazolidine-2,3-diyl))bis(ethan-1-ol), 2,2'-(1,9-dioxa-4,12-diazadispiro[4.2.4^8.2^5]tetradecane-4,12-diyl)bis(ethan-1-ol), (1,4-phenylenebis(oxazolidine-2,4,4-triyl))tetramethanol, (1,9-dioxa-4,12-diazadispiro[4.2.4^8.2^5]tetradecane-3,3,11,11-tetrayl)tetramethanol, (1,9-dioxa-4,12-diazadispiro[4.2.4^8.2^5]tetradecane-3,11-diyl)dimethanol, (3,11-diethyl-1,9-dioxa-4,12-diazadispiro[4.2.4^8.2^5]tetradecane-3,11-diyl)dimethanol, (1,4-phenylenebis(4-ethyloxazolidine-2,4-diyl))dimethanol, (3,11-diethyl-1,9-dioxa-4,12-diazadispiro[4.2.4^8.2^5]tetradecane-3,11-diyl)dimethanol, 2,2'-(3,11-bis(hydroxymethyl)-1,9-dioxa-4,12-diazadispiro[4.2.4^8.2^5]tetradecane-4,12-diyl)bis(ethan-1-ol) and/or
- imines and Schiff bases chosen from the group consisting of 2,2'-((1,4-phenylenebis(methanylylidene))bis(azanylylidene)) bis(propane-1,3-diol), 2,2'-((furan-2,5-diylbis(methanylylidene))bis(azanylylidene)) bis(propane-1,3-diol), and/or
- 1,4-Addition products chosen from the group consisting of 2-hydroxyethyl 3-((2-hydroxyethyl)thio)propanoate, 3-hydroxy-2-(hydroxymethyl)-2-methylpropyl 3-((3-hydroxy-2-(hydroxymethyl)-2-methylpropyl)thio)-2-methylpropanoate, 3-hydroxy-2-(hydroxymethyl)-2-methylpropyl (S)-3-((2,3-dihydroxypropyl)thio)propanoate, 2-ethyl-2-(((3-((2-hydroxyethyl)thio)propanoyl)oxy)methyl)propane-1,3-diyl bis(3-((2-hydroxyethyl)thio)propanoate), 4-hydroxybutyl 3-((1,3-dihydroxypropan-2-yl)amino)propanoate, bis(2-hydroxyethyl) 3,3'-(butylazanediyl)dipropionate, bis(2-hydroxyethyl) 3,3'-((4-hydroxybutyl)azanediyl)dipropionate, bis(2-hydroxyethyl) 3,3'-(piperazine-1,4-diyl)dipropionate, tetrakis(2-hydroxyethyl) 3,3',3",3"'-(propane-1,3-diylbis(azanetriyl))tetrapropionate, bis(3-((2-hydroxyethyl)thio)propyl) 2-((2-hydroxyethyl)thio)succinate, and/or

- carbonates chosen from the group consisting of bis(2,3-dihydroxypropyl) carbonate, bis(3-hydroxy-2-(hydroxymethyl)-2-methylpropyl) carbonate, benzene-1,3,5-triyl tris(3-((2-hydroxyethyl)thio)propyl) tricarbonate, and/or
- aryl ketone derivatives chosen from the group consisting of bis(2-hydroxyethyl) 2,2'-(methylenebis(4,1-phenylene))bis(2-oxoacetate), bis(2,2-bis(hydroxymethyl)butyl) 2,2'-(methylenebis(4,1-phenylene))bis(2-oxoacetate), bis(2-hydroxyethyl) 2,2'-(ethane-1,2-diylbis(4,1-phenylene))bis(2-oxoacetate), bis(3-hydroxy-2-(hydroxymethyl)-2-methylpropyl) 2,2'-(1,4-phenylene)bis(2-oxoacetate), 1,1'-(1,4-phenylene)bis(5-hydroxypentan-1-one), and mixtures thereof.

4- The process according to any one of the preceding claims, wherein the polyfunctional monomer is chosen from the group consisting of at least one polyisocyanate, polyanhydride, poly acyl chloride, polyepoxide, polyacrylate monomers, polymethacrylate and polyalkoxysilane, and mixtures thereof.

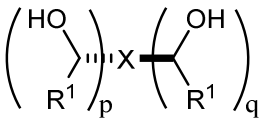
5- The process according to any one of the preceding claims, wherein the reactant is chosen from the group consisting of nitrogen nucleophile, sulfur nucleophile, enol carbon nucleophile, oxygen nucleophile, phosphor nucleophile and mixtures thereof.

6- The process according to claim 5, wherein the reactant is chosen from the group consisting of xylylene diamine, 1,2-diaminocyclohexane, 1,4-diaminocyclohexane, L-lysine, L-Lysine ethyl ester, O,O′-bis(2-aminopropyl) polypropylene glycol-block-polyethylene glycol-block-polypropylene glycol, ethylene diamine, 1,3-diamino-2-hydroxypropane, diethylene triamine, spermine, spermidine, cystamine, cystine, cystine dialkyl ester, aminoguanidine bicarbonate, N,N’-diethylethylenediamine, polyamidoamine (PAMAM), chitosan, 3-aminopropyltriethoxysilane, L-arginine, 1,3-diaminopropane, N-ethylguanidine sulfate, 1,6-diaminohexane, guanidine salts, N,N,N′,N′-tetrakis(3-aminopropyl)-1,4-butanediamine, guanazole, 2-amino-1,3-propanediol, ethanolamine tris(2-aminoethyl)amine, tris(3-aminopropyl)amine, tris[2-(methylamino)ethyl]amine, 1-(2-Aminoethyl)piperazine, triethylenetetramine, triethanolamine, phthalic acid dipotassium salt, succinic acid disodium salt, dithiothreitol and mixtures thereof.

7- The process according to any one of the preceding claims, wherein the stabilizer is chosen from the group consisting of gum Arabic, modified starch, polyvinyl alcohol, polyvinylpyrrolidone, carboxymethylcellulose, anionic polysaccharides, acrylamide copolymer, inorganic particles, proteins and mixtures thereof.

8- A core-shell microcapsule comprising:

- an oil-based core comprising a hydrophobic material, preferably a perfume, and
- a shell comprising a reaction product between a polyfunctional monomer and a cleavable multi-alcohol, wherein the cleavable multi-alcohol has the following formula (I)



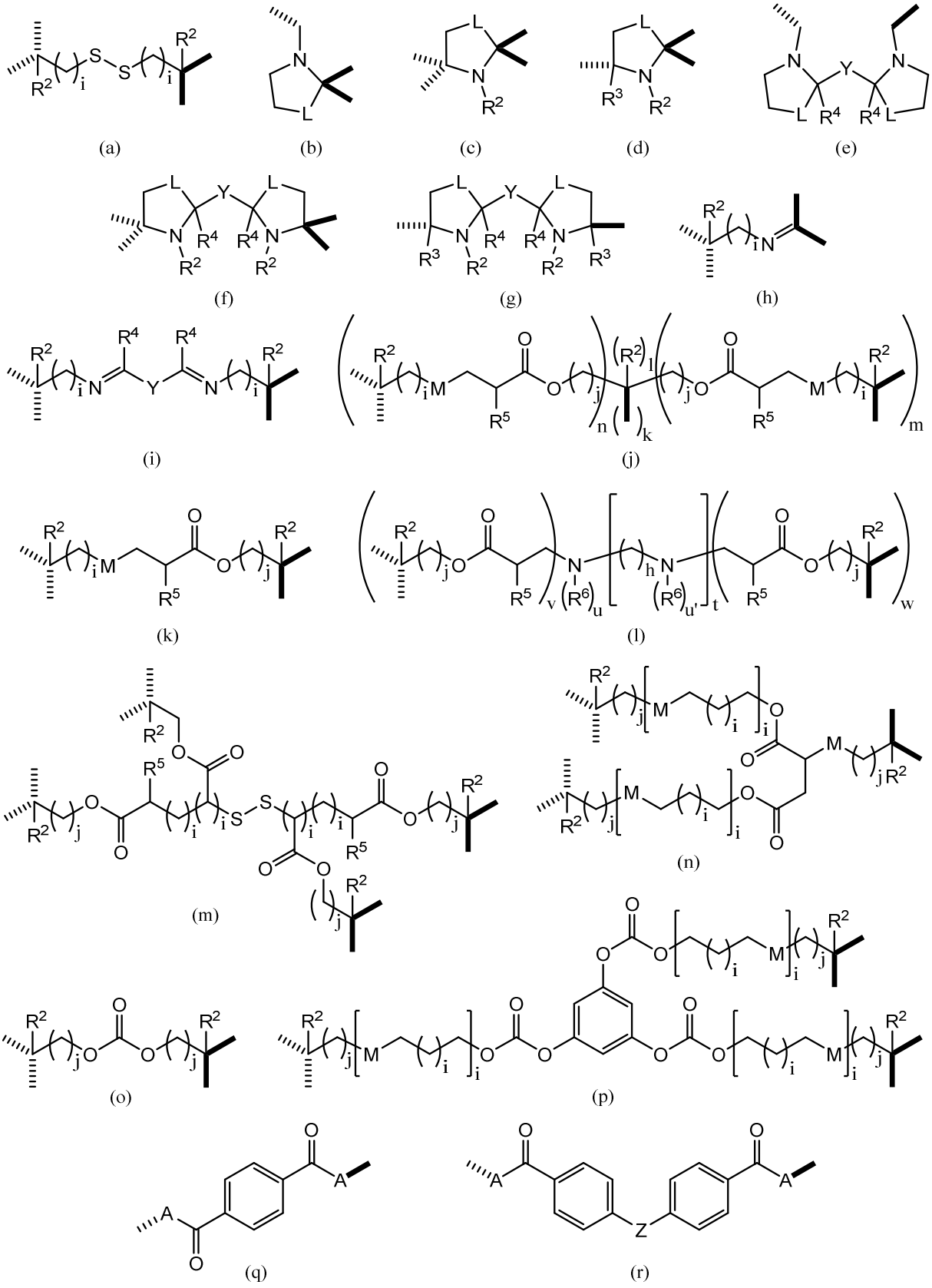
(I)

wherein each R^1 is independently H or CH_2OH and wherein p and q are integers varying between 1 and 3, preferably p and q are either 1 or 2, and

wherein X is a C_2 to C_{30} hydrocarbon group, possibly comprising one to ten heteroatoms, selected from O, S and N to form ether, ester, carboxylic acid, aldehyde, ketone, alcohol, thiol, disulfide, thioether, thioester, carbamate, amide, oxime, imine, amine or nitrile functional groups, and

wherein the cleavable multi-alcohol is not trimethylol propane, and

wherein X is selected from the group consisting of



with L being a O or a S atom or a NH group, preferably a O atom, M being a S atom or a NR^6 group, preferably a S atom, Y being a CH_2, a CH_2-CH_2 or a phenyl group, Z being a $O(CH_2)_xO$ or a $(CH_2)_x$ group with x being an integer varying between 1 and 4, and A being a $COOCH_2(CR^2R^2)_i$, $CHR^2OCH_2(CR^2R^2)_i$ or $(CR^2R^2)(CHR^2)_x$ group,

with each R^2 being independently a H, CH_3, CH_2CH_3, CH_2OH or CH_2CH_2OH group and each R^3 being independently a CH_3 or CH_2CH_3 group,

with R^4 being either H or CH_3 or, if Y is not phenyl group, then two R^4 taken together may represent a CH_2 or a CH_2-CH_2 group,

with R^5 being either H or CH_3,

with R^6 being either H, a C_1-C_6 alkyl group or a CH_2-CH_2-$(CH_2)_j$-OH group, if t = 1 two R^6 taken together might form a CH_2-CH_2-$(CH_2)_i$ group,

with h being an integer varying between 1 and 6, each i being individually of each other 0 or 1, each j being individually of each other an integer varying between 0 and 2, and

with k and l being integers varying between 0 and 2, and m and n being 1 or 2, with the proviso that k + l + m + n = 4,

with t, u and u' being 0 or 1, v and w being 1 or 2, and with the proviso that u + v + w = 3 (if t = 0) or u + u' + v + w = 4 (if t = 1), and

wherein the hatched and the bold lines are either linked to a hydrogen atom or indicate the bond between said X and the $(CHR^1OH)_p$ (hatched line) or $(CHR^1OH)_q$ (bold line) groups of the multi-alcohol of formula (I), with the proviso that at least one hatched and at least one bold line of X are linked to a CHR^1OH group.

9- The core-shell microcapsule according to claim 8, wherein the polyfunctional monomer is chosen from the group consisting of at least one polyisocyanate, polyanhydride, poly acyl chloride, polyepoxide, polyacrylate monomers, polymethacrylate and polyalkoxysilane, and mixtures thereof.

10- A perfuming composition comprising

(i) Perfume microcapsule as defined in claim 9, wherein the hydrophobic material comprises a perfume,

(ii) At least one ingredient selected from the group consisting of a perfumery carrier and a perfumery base

(iii) Optionally at least one perfumery adjuvant.

11- A consumer product comprising:

- a personal care active base, and
- microcapsules as defined in claim 9 or the perfuming composition as defined in claim 10,

wherein the consumer product is in the form of a personal care composition.

12- A consumer product comprising:

- a home care or a fabric care active base, and
- microcapsules as defined in claim 9 or the perfuming composition as defined in claim 10,

wherein the consumer product is in the form of a home care or a fabric care composition.