CLAIMS

1- A process for preparing a core-shell microcapsule slurry, said process comprising the steps of:

(i) Mixing in a dispersing phase a protein and a polycation;

(ii) Adding an oil phase comprising a hydrophobic material, preferably a perfume or a flavor to the dispersing phase to form a dispersion;

(iii) performing a curing step to form a microcapsule slurry;

wherein at least one silicon precursor is added in step (i) and/or in step (ii) and/or in step (iii).

2- The process according to claim 1, wherein the protein is chosen in the group consisting of potato protein, chickpea protein, algae protein, faba bean protein, barley protein, oat protein, wheat gluten protein, lupin protein, whey protein, milk proteins, caseinate salts such as sodium caseinate or calcium caseinate, casein, hydrolyzed proteins, gelatins, gluten, pea protein, soy protein, silk protein, beta-lactoglobulin, ovalbumine, bovine serum albumin, and mixtures thereof.

3- The process according to claim 1 or 2, wherein the polycation is chosen in the group consisting of chitosan, chitosan oligomer, chitosan oligosaccharide, Ca^{2+}, Mg^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, and mixtures thereof.

4- The process according to claim 3, wherein the polycation is a chitosan oligosaccharide having a molecular weight lower than 5000, preferably lower than 3000.

5- The process according to any one of the preceding claims, wherein the weight ratio between the protein and the polycation is comprised between 5:1 and 1:3, preferably between 3:1 and 1:2, more preferably is 2:1.

6- The process according to any one of the preceding claims, wherein the protein is whey protein, preferably whey protein isolate, and wherein the polycation is chitosan oligosaccharide.

7- The process according to any one of the preceding claims, wherein the at least one silicon precursor is chosen in the group consisting of tetraethyl orthosilicate (TEOS), tetramethyl orthosilicate (TMOS), triethoxymethylsilane, dimethyldimethoxysilane, ethyltriethoxysilane, amine functionalized silanes, (3-aminopropyl)triethoxysilane, (3-aminopropyl)trimethoxysilane, N-(2-aminoethyl)-3-aminopropyltriethoxysilane, N-dimethyl-3-aminopropylmethyldimethoxysilane, 3-aminopropylmethyldiethoxysilane, 4-aminobutylthiethoxysilane, and mixtures thereof.

8- The process according to any one of the preceding claims, wherein the at least one silicon precursor is added in the dispersion, preferably in a two-phases dispersion, obtained in step ii).

9- The process according to any one of the preceding claims, wherein at least a first silicon precursor is added in the dispersion, preferably in a two-phases dispersion, obtained in step ii) and wherein at least a second silicon precursor is added during or after step (iii).

10- The process according to claim 9, wherein the first silicon precursor is tetraethyl orthosilicate and wherein the second silicon precursor is (3-aminopropyl)triethoxysilane.

11 - The process according to any one of the preceding claims, wherein long and/or medium chain silane or mixture of silanes are added to the oil phase, wherein the long and/or medium chain silane is chosen from the group of silanes with organic chain substitution of more than 3 carbons such as triethoxy-n-octylsilane, dodecyltriethoxysilane, octadecyltriethoxysilane, decyltriethoxysilane, n-hexyltriethoxysilane and hexadecyltriethoxysilane, and mixtures thereof.

12- The process according to any one of the preceding claims, wherein no polyfunctional monomer is added at any stage of the process, wherein the polyfunctional monomer is chosen in the group consisting of at least one polyisocyanate, poly anhydride, such as poly maleic anhydride, poly acid chloride, i.e. acyl chloride, polyepoxide, acrylate monomers and mixtures thereof.

13- A core-shell microcapsule comprising:

- an oil-based core comprising a hydrophobic material, and
- a composite shell comprising
  (i) a biopolymer-based material comprising complexes made of a protein and a polycation, and
  (ii) a silicon-based material.

14- The core-shell microcapsule according to claim 13, wherein the protein is whey protein, preferably whey protein isolate, and wherein the polycation is chitosan oligosaccharide.

15- A consumer product in the form of a perfumed consumer product or a flavoured consumer product comprising the microcapsules as defined in claim 13 or 14.