Claims

1. An encapsulated composition comprising at least one core-shell microcapsule, wherein the at least one core-shell microcapsule comprises a core comprising at least one benefit agent and a shell surrounding the core, wherein the shell comprises a first and a second polyelectrolyte which form a complex coacervate, and wherein the microcapsule comprises at least one interfacial enabler, wherein the interfacial enabler is a cross-linker, cross-linking the first and/or second polyelectrolyte, wherein the interfacial enabler is a diacid or a cyclic dialdehyde.

2. The encapsulated composition according to claim 1, wherein the core consists of a liquid core composition and the interfacial enabler is soluble in the core composition.

3. The encapsulated composition according to one of claims 1 or 2, wherein the first polyelectrolyte is a polyampholyte.

4. The encapsulated composition according to claim 3, wherein the isoelectric point of the polyampholyte is below pH 7, preferably below pH 6, more preferably below pH 5.5, even more preferably below pH 5.0.

5. The encapsulated composition according to one of claims 1 to 4, wherein the solubility of the first and second polyelectrolytes is higher than 5 wt.-%, preferably higher than 10 wt.-%, water at pH 7 ± 0.5 and at room temperature.

6. The encapsulated composition according to one of claim 3 to 5, wherein the polyampholyte is a protein.

7. The encapsulated composition according to claim 6, wherein the protein is originating from a vegan source, optionally wherein the protein originating form a vegan source is selected from soy proteins, pea proteins, rice proteins and hemp proteins, preferably soy proteins.

8. The encapsulated composition according to claim 6 or 7, wherein an aqueous solution comprising a nominal percentage of the protein, in particular the protein originating from a vegan source, of 5 wt.-% comprises less than 0.1 wt.-%, preferably less than 0.05 wt.-%, of insoluble material, based on the total weight of the solution.

9. The encapsulated composition according to one of claims 1 to 8, wherein the second polyelectrolyte is a polysaccharide, preferably a polysaccharide comprising carboxylic acid groups.

10. The encapsulated composition according to claim 9, wherein the polysaccharide comprising carboxylic acid groups is selected from the group consisting of carboxymethylcellulose, gum acacia, alginate, pectin, hyaluronic acid, xanthan gum, gellan gum, and their salts with monovalent alkaline metals, preferably carboxymethylcellulose and sodium carboxymethylcellulose.

11. The encapsulated composition according to claim 10, wherein the carboxymethylcellulose and/or the sodium carboxymethylcellulose have a molecular weight of from 50’000 to 250’000 g/mol, preferably from 75’000 to 125’000 g/mol, and a degree of substitution of from 0.5 to 1.5, preferably from 0.6 to 1.1.

12. The encapsulated composition according to one of claims 10 or 11, wherein the weight ratio of the carboxymethylcellulose and/or the sodium carboxymethylcellulose, to the protein, preferably the protein originating form a vegan source, more preferably the soy protein, is from 0.05 to 0.2, preferably from 0.08 to 0.12.

13. The encapsulated composition according to claim 1, wherein the interfacial enabler is a) an aromatic dialdehyde; or

b) a dialdehyde selected from the group consisting of 1,3-benzenedicarbaldehyde, 1,3-cycloxanedicarbaldehyde, cyclopentane-1,3-dicarbaldehyde, furan-2,5-dicarbaldehyde and 1,4-diformylpyperazin, preferably from 1,3-benzenedicarbaldehyde and

1,4-diformylpyperazin, and more preferably from 1,3-benzenedicarbaldehyde.

14. The encapsulated composition according to one of claims 1 to 13, wherein the interfacial enabler is present at a level of from 0.1 to 5 wt.-%, preferably from 0.5 to 2.0 wt.-%, still more preferably from 0.75 to 1.5 wt.-%, based on the weight of the core composition.

15. The encapsulated composition according to one of claims 6 to 14, wherein the weight ratio of the interfacial enabler to the protein, preferably the protein originating form a vegan source, even more preferably the soy protein, is from 0.01 to 0.1, preferably from 0.02 to 0.08, more preferably from 0.03 to 0.07.

16. The encapsulated composition according to one of claims 1 to 15, wherein the benefit agent comprised in the core or the core composition is selected from the group consisting of fragrance ingredients, cosmetic ingredients and biologically active ingredients.

17. The encapsulated composition according to one of claims 1 to 16, comprising a plurality of core-shell microcapsules, wherein the volume median diameter of the microcapsules (Dv(50)) is from 1 to 150 µm, preferably from 5 to 100 µm, even more preferably from 8 to 25 µm.

18. A process for preparing an encapsulated composition, in particular a composition according to one of claims 1 to 17, the process comprising the steps of:

a) Providing a core composition comprising an interfacial enabler;

b) Providing an aqueous phase comprising a first and a second polyelectrolyte;

c) Emulsifying the core composition provided in step a) into the aqueous phase provided in step b) in order to obtain core composition droplets having a volume median diameter of 1 to 100 µm, preferably 5 to 75 µm, more preferably 8 to 60 µm, even more preferably 7 to 20 µm, dispersed in the aqueous phase;

d) Decreasing the pH until the coacervation pH has been reached, forming thereby a slurry of core-shell microcapsules;

e) Optionally: Adding a cross-linking agent, a further cross-linking agent if applicable, and keeping the slurry under stirring, in order to obtain a slurry of cross-linked microcapsules.

19. The process according to claim 18, wherein in step b) the aqueous phase is provided at a pH of from 5 to 13, preferably from 7 to 13, more preferably from 9 to 12.5, even more preferably from 11 to 12.

20. The process according to one of claims 18 or 19, wherein in step e) the cross-linking agent, the further cross-linking agent if applicable, is selected from the group consisting of glutaraldehyde and transglutaminase.

21. An encapsulated composition obtainable by a process according to one of claims 18 to 20.

22. A use of an interfacial enabler for obtaining an encapsulated composition, in particular a composition according to one of claims 1 to 17 or 21.

23. A consumer product comprising an encapsulated composition according to one of claims 1 to 17 or 21, preferably a fabric care product, a home care product or a personal care product.

24. A use of an encapsulated composition according to one of claims 1 to 17 or 21 for obtaining a consumer product.