# CLAIMS

What is claimed is:

Claim 1. A method for strengthening hair comprising the steps of:

a) applying to the hair a first formulation which contains an at least bi-functional Brønsted-base of the general formula X-R-Y, wherein X and Y are independently selected from the groups of amino, carboxylate, nitrate, hydrogenphosphate, phosphate, sulfate and carbonate and R is an organic molecule group with 1 to 20 carbon atoms, and 0 to 5 oxygen atoms, and 0 to 5 nitrogen atoms and is not an aromatic or heteroaromatic compound, and X-R-Y has a molecular weight of less than 500 g/mol, and

b) applying to the hair a second formulation containing an at least bi-functional organic acid capable of reacting with the amine groups of the hair,

characterized in that

the first formulation has a pH of >7 to 12, and the second formulation has a pH of 1.5 to <7, and

the at least bi-functional Brønsted-base of the general formula X-R-Y is a mixture of 4,7,10-trioxa-1,13-tridecanediamine, 4,9-dioxa-1,12-dodecanediamine and 1,11-diamino-3,6,9-trioxaundecane, or the at least bi-functional Brønsted-base of the general formula X-R-Y is a mixture of 4,7,10-trioxa-1,13-tridecanediamine and 4,9-dioxa-1,12-dodecanediamine, or the at least bi-functional Brønsted-base of the general formula X-R-Y is 4,7,10-trioxa-1,13-tridecanediamine, and

the at least bi-functional organic acid is maleic acid, itaconic acid or a mixture of maleic acid and itaconic acid.

Claim 2. The method of claim 1, wherein the concentration of the at least bi-functional Brønsted-base in (a) is 1 - 30%.

Claim 3. The method of claim 1, wherein the concentration of the at least bi-functional organic acid in (b) is 1 - 30%.

Claim 4. The method of claims 1, 2, 3 wherein step (a) is performed prior to step (b).

Claim 5. The method of claims 1, 2, 3 wherein step (b) is performed prior to step (a).

Claim 6. The method of any of the preceding claims, wherein the at least bi-functional organic acid of step (a) is selected from the group of oxalic-, malonic-, succinic-, glutaric-, adipic-, pimeric-, suberic-, azelaic-, sebacic-, undecanedioic-, dodecanedioic-, methylmalonic-, methylsuccinic-, 2-methylglutaric-, aspartic-, maleic-, fumaric-, itaconic-, mesaconic-, methylmaleic-, phthalic-, isophthalic-, terephthalic-, malic-, ketomalonic-, 4-ketopimelic-, citric-, isocitric-, aconitic-, propane-1,2,3-tricarboxylic-, trimesic-,

methanetetracarboxylic-, ethylenetetracarboxylic-, meso-butane-1,2,3,4-tetracarboxylic-, furantetracarboxylic-acid, derivatives and mixtures thereof.

Claim 7. The method of any of the preceding claims, wherein the proton-acceptor groups X and Y of the at least bi-functional Bronsted-base of step (a) are independently selected from the

groups of amino, carboxylate, nitrate, hydrogen phosphate, phosphate, sulfate, and carbonate.

Claim 8. The method of any of the preceding claims, wherein the hair is dried between steps (a) and

(b) and the drying time is 1 to 60 minutes.

Claim 9. The method of claim 8, wherein a drying device is used for drying the hair.

Claim 10. The method of any of the preceding claims, wherein the formulation of step (a) is left on the hair for 1 to 45 minutes.

Claim 11. The method of any of the preceding claims, wherein the formulation of step (b) is left on the hair for 1 to 45 minutes.

Claim 12. The method of any of the preceding claims, wherein there is a waiting time between the applications of steps (a) and (b) or (b) and (a) of 1 to 60 minutes.

Claim 13. The method of any of the preceding claims, wherein the formulations of steps (a) and (b) are independently mixed into a cosmetically acceptable carrier and where the cosmetically acceptable carrier of the formula of step (a) is either identical or not to the cosmetically acceptable carrier of the formula of step (b).

Claim 14. The method of any of the preceding claims, wherein the formulation of step (a) is mixed into a commercially available hair colouring or hair bleaching formulation prior to the application to hair.

Claim 15. The method of any of the preceding claims, wherein prior to the application of step (a) the hair is treated with a thioglycolic acid containing hair care composition.

Claim 16. Kit for the strengthening of hair containing at least two separate formulations, wherein the first formulation contains an at least bifunctional Bronsted-Base of the general formula XR-Y, wherein X and Y are selected independently from each other from the groups of amino, carboxylate, nitrate, hydrogenphosphate, phosphate, sulfate, carbonate and R is an organic molecule group with 1— 20 carbon atoms, 0 to 5 oxygen atoms and 0 to 5 nitrogen atoms and is not an aromatic or heteroaromatic compound, and X-R-Y has a molecular weight below 500 g/mol and the second formulation contains an at least bifunctional organic acid, which can react with the amino groups of the hair, characterized in that

the first formulation has a pH-value of >7-12 and the second formulation has a pH-value of 1,5 to <7 and

the at least bi-functional Brønsted-base of the general formula X-R-Y is a mixture of 4,7,10-trioxa-1,13-tridecanediamine, 4,9-dioxa-1,12-dodecanediamine and 1,11-diamino-3,6,9-trioxaundecane, or the at least bi-functional Brønsted-base of the general formula X-R-Y is a mixture of 4,7,10-trioxa-1,13-tridecanediamine and 4,9-dioxa-1,12-dodecanediamine, or the at least bi-functional Brønsted-base of the general formula X-R-Y is 4,7,10-trioxa-1,13-tridecanediamine, and

the at least bi-functional organic acid is maleic acid, itaconic acid or a mixture of maleic acid and itaconic acid.

Claim 17. Kit for the strengthening of hairs according to claim 16, wherein the kit further comprises a hair-conditioner.

Claim 18. Kit for the strengthening of hairs according to claim 16, wherein the concentration of the at least bifunctional Brønsted-Base in the first formulation is 1 - 30 %.

Claim 19. Kit for the strengthening of hairs according to claim 16, wherein the concentration of the at least bifunctional organic acid in the second formulation is 1 — 30 %.

Claim 20. Kit for the strengthening of hairs according to claim 16, wherein the at least bifunctional organic acid of the second formulation has been selected from the group of oxalic, malonic, succinic, glutaric-, adipinic-, pimelic-, suberic-, azelainic-, sebacic-, undecandioic-,dodecandioic-, methylmalonic-, methylsuccinic-, 2-methyiglutaric-, aspartic-, maleic-,fumaric-, itaconic-, mesaconic-, methylmaleic-, phthalic-, isophthalic-, terephthalic-,malic-, ketomalonic-, 4-ketopimelic-, citric-, isocitric-, aconitic-, propan-1,2,3-tricarboxylic-, trimesic-, methantetracarboxylic-, ethylenetetracarboxylic-, meso-butane- 1,2,3,4-tetracarboxylic-, furantetracarboxylic-acid, derivatives and mixtures thereof.

Claim 21. Kit for the strengthening of hairs according to claim 16, wherein the first and the second formulations further contain at least a viscosity-modifying agent.

Claim 22. Kit for the strengthening of hairs according to claim 16, wherein the first and the second formulations further contain at least one emulsifier and/or a surfactant.

Claim 23. Kit for the strengthening of hairs according to claim 16, wherein the first and the second formulation further contain at least one particulate material.

Claim 24. Kit for the strengthening of hairs according to claim 16, wherein the first and the second formulation further contain at least one preservative.

Claim 25. Kit for the strengthening of hairs according to claim 16, wherein the first and the second formulations independent of each other are mixed into cosmetic acceptable substrates and wherein the cosmetic acceptable substrate of the first formulation is either identical or different from the cosmetic acceptable substrate of the second formulation.