environment", where the polymeric micelles may be physically removed immediately after use, should be avoided, and they are restricted, in principle, to usage in stable environments to exhibit their technical value.

[0006] With regard to block copolymers that have been used as a material for polymeric micelles, the present inventors found that, if a block copolymer or polymeric micelle is intentionally used as a component of a treatment agent for hair, which can be used in an "unstable environment" where it may be physically removed, the physical strength of the hair can be significantly improved and this strength improving effect can be maintained even after a washing operation, which is one example of an unstable environment, and the present invention was completed.

[0007] The present invention provides a polymer treatment agent for hair comprising a block copolymer having a hydrophilic polymer chain segment and a hydrophobic polymer chain segment.

[0007a] The present invention provides a polymer treatment agent for hair comprising: a block copolymer having a hydrophilic polymer chain segment and a hydrophobic polymer chain segment that is derived from polyamino acid in the range of more than 0 mass% to 0.01 mass% or less,wherein the polymer treatment agent is a damaged hair rehabilitation agent.

Effects of the Invention

[0008] According to the present invention, a polymer treatment agent for hair, which can improve the physical strength of hair even if used in only a small amount and also without using a silicone component, can be provided.

MODES FOR CARRYING OUT THE INVENTION

[0009] The polymer treatment agent for hair contains a

CLAIMS

1. A polymer treatment agent for hair comprising:

a block copolymer having a hydrophilic polymer chain segment and a hydrophobic polymer chain segment that is derived from polyamino acid in the range of more than 0 mass% to 0.01 mass% or less,

wherein the polymer treatment agent is a damaged hair rehabilitation agent.

2. The polymer treatment agent according to claim 1, further comprising a solvent.

3. The polymer treatment agent according to claim 2, wherein the solvent is an aqueous medium or a non-aqueous medium.

4. The polymer treatment agent according to claim 2 or 3, wherein at least some molecules of the block copolymer are in a state of being separated from one another in the solvent.

5. The polymer treatment agent according to claim 2 or 3, wherein at least some molecules of the block copolymer are in the state of having formed a polymeric micelle in the solvent.

6. The polymer treatment agent according to claim 5, wherein the solvent is an aqueous medium, and the molecules of the block copolymer are in the state of having formed a polymeric micelle and are radially oriented such that hydrophilic polymer chain segments are disposed outward and hydrophobic polymer chain segments are disposed inward.

7. The polymer treatment agent according to any one of claims 1-6, wherein it contains the block copolymer in the range of more than 0 mass% to 0.005 mass% or less.

8. The polymer treatment agent according to any one of claims 1-7, wherein it contains the block copolymer in the range of 0.0005 mass% or more.

9. The polymer treatment agent according to claim 8, wherein it contains the block copolymer in the range of 0.001 mass% or more.

10. The polymer treatment agent according to any one of claims 1-9, wherein the hydrophobic polymer chain segment includes a repeating unit having an alkyl- or aralkyl group side chain amino acid residue and a repeating unit not having an alkyl- or aralkyl group side chain amino acid residue.

11. The polymer treatment agent according to claim 10, wherein the molar proportion of the repeating unit having the alkyl- or aralkyl group side chain amino acid residue is 20% or more relative to all the repeating units in the hydrophobic polymer chain segment.

12. The polymer treatment agent according to claim 11, wherein the molar proportion of the repeating unit is 35% or more.

13. The polymer treatment agent according to claim 12, wherein the molar proportion of the repeating unit is 40% or more.

14. The polymer treatment agent according to claim 13, wherein the molar proportion of the repeating unit is 50% or more.