CLAIMS

1. A fiber comprising two or more fibrils,

the two or more fibrils each comprising an anionic α-keratin intermediate filament and a cationic polymer,

the cationic polymer selected from the group consisting of a cationic polysaccharide and a cationic α-keratin intermediate filament.

2. The fiber of claim 1, wherein the fiber comprises at least 5 fibrils, for example, about 10 fibrils.

3. The fiber of claim 1 or 2, wherein the cationic polymer is a cationic α-keratin intermediate filament, or wherein the cationic polymer is a cationic polysaccharide, optionally wherein the cationic polysaccharide is cationic chitosan.

4. The fiber of any one of the preceding claims, wherein the anionic α-keratin intermediate filament, and the cationic α-keratin intermediate filament when present, are each obtained from a mammalian source, for example a human source, optionally wherein the anionic α-keratin intermediate filament, and the cationic α-keratin intermediate filament when present, are each derived from mammalian hair, for example human hair.

5. The fiber of any one of the preceding claims, wherein one or both of the following apply:
(a) the anionic α-keratin intermediate filament, and the cationic α-keratin intermediate filament when present, are each substantially free from keratin associated proteins; and
(b) the anionic α-keratin intermediate filament, and the cationic α-keratin intermediate filament when present, are each substantially free from lipids.

6. The fiber of any one of the preceding claims, wherein one or more of the following apply:

(a) the fiber is formed from about 10 fibrils and has a cross-sectional diameter of from about 70 μm to about 200 μm, for example, from about 150 μm to about 200 μm;

(b) the fiber has a homogenous cross-section; and

(c) each fibril is formed by interfacial polyelectrolyte complexation.

7. A suture comprising one or more fibers according to any one of claims 1 to 6.

8. A mesh comprising one or more fibers according to any one of claims 1 to 6.

9. A method of preparing the fiber according to any one of claims 1 to 6, said method comprising:
   (a) providing an aqueous solution of the anionic α-keratin intermediate filament and an aqueous solution of the cationic polymer;
   (b) contacting the aqueous solution of the anionic α-keratin intermediate filament and the aqueous solution of the cationic polymer under conditions conducive to form an interface; and
   (c) pulling a fibril formed from the anionic α-keratin intermediate filament and the cationic polymer from the interface;
   (d) forming the fiber according to any one of claims 1 to 6 by combining two or more portions of the fibril from step (c) or combining two or more fibrils formed by repeating steps (a) to (c).

10. The method according to claim 9, wherein step (a) further comprises providing a sample of mammalian hair, followed by extracting lipids from the sample using an organic solvent and extracting keratin associated proteins from the sample using a denaturing agent, thereby providing a sample of α-keratin intermediate filaments, optionally wherein one or both of the following apply:
   (i) step (a) further comprises reducing the sample of α-keratin intermediate filaments with a reducing agent; and
   (ii) step (a) further comprises providing the sample of α-keratin intermediate filaments in an aqueous solution, followed by exchanging the aqueous solution with deionised water, thereby providing the aqueous solution of the anionic α-keratin intermediate filament.

11. The method according to claim 9 or 10, wherein the aqueous solution of the anionic α-keratin intermediate filament has an anionic α-keratin intermediate filament concentration of from about 4 mg/ml to about 15 mg/ml, for example about 9 mg/ml.

12. The method according to any one of claims 9 to 11, wherein the cationic polymer is a cationic α-keratin intermediate filament.

13. The method according to claim 12 when dependent on claim 10, wherein step (a) further comprises providing the sample of α-keratin intermediate filaments in an aqueous solution, followed by reducing the pH of the aqueous solution to a pH of below about 4.5, thereby providing an aqueous solution of the cationic α-keratin intermediate filament.

14. The method according to claim 12 or 13, wherein the aqueous solution of the cationic polymer has a cationic α-keratin intermediate filament concentration of from about 1 mg/ml to about 12 mg/ml, for example about 5 mg/ml.

15. The method according to any one of claims 9 to 11, wherein one or both of the following apply:

(i) the cationic polymer is a cationic polysaccharide, for example cationic chitosan, optionally wherein step (a) further comprises providing a sample of a polysaccharide, followed by dissolving the polysaccharide in an aqueous acid solution, thereby providing an aqueous solution of the cationic polysaccharide, yet further optionally wherein the aqueous solution of the cationic polysaccharide has a cationic polysaccharide concentration of from about 10 mg/ml to about 30 mg/ml, for example, about 25 mg/ml; and

(ii) step (d) comprises spooling the fibril onto itself, thereby combining two or more portions of the fibril to form the fiber.