

DESCRIPTION

METHOD FOR MANUFACTURING WIG IMITATION HAIR AND WIG

Technical Field

[0001]

The present disclosure relates to a method for manufacturing a wig imitation hair and a wig using the wig imitation hair.

Background Art

[0002]

There is proposed a wig in which, in order to add an eye-catching dramatic effect to a wig, optical fibers connected to a light source are used as part of imitation hairs for a wig (see Patent Literature 1, for example). Further, in the description of Patent Literature 1, optical fibers to become imitation hairs are blown with a hair dryer and curled to give a natural appearance to a wig.

Citation List

Patent Literature

[0003]

Patent Literature 1: JP 2001-226812 A

Summary of Invention

Technical Problem

[0004]

However, in the method of blowing a hair dryer on

optical fibers, the temperature locally reaches close to 120°C at a part of the optical fibers blown by a hot air of the hair dryer, so that cores of the optical fibers may be damaged and the light guiding function can be lost.

Furthermore, since the temperature rises locally, it is possible to obtain a strong bend like a curl, but it is difficult to obtain a gentle natural wave.

[0005]

The present disclosure solves the above problems, and an object of the present disclosure is to provide a manufacturing method capable of forming a wig imitation hair, configured with an optical fiber, having a gentle natural wave without giving any damage, and a wig using the wig imitation hair.

Solution to Problem

[0006]

To solve the above problems, one aspect of the present disclosure is a method for manufacturing a wig imitation hair configured with an optical fiber, and the method includes:

a first step of fixing a plastic optical fiber on a deformable core member by spirally winding the plastic optical fiber around the core member;

a second step of heating the core member around which the plastic optical fiber is wound by holding the

core member in a housing having an internal temperature of more than or equal to 70°C and less than or equal to 90°C for a predetermined period of time; and

a third step of cooling the heated plastic optical fiber and removing the plastic optical fiber from the core member.

[0007]

Another aspect of the present disclosure is a wig in which the wig imitation hair manufactured by the above manufacturing method is attached to a wig base.

Advantageous Effects of Invention

[0008]

The present disclosure can provide a manufacturing method capable of forming a wig imitation hair configured with an optical fiber having a gentle natural wave without giving any damage, and can provide a wig using the wig imitation hair.

Brief Description of Drawings

[0009]

FIG. 1A is a schematic diagram for describing a first step of manufacturing a wig imitation hair configured with an optical fiber according to one embodiment of the present disclosure.

FIG. 1B is a schematic diagram for describing a second step of manufacturing the wig imitation hair

configured with an optical fiber according to the one embodiment of the present disclosure.

FIG. 1C is a schematic diagram for describing a third step of manufacturing the wig imitation hair configured with an optical fiber according to the one embodiment of the present disclosure.

FIG. 1D is a schematic diagram for describing a fourth step of manufacturing the wig imitation hair configured with an optical fiber according to the one embodiment of the present disclosure.

FIG. 2A is a view (photograph) showing a second example and shows an example and a comparative example in the first step.

FIG. 2B is a view (photograph) showing a second example and shows the example and the comparative example after a third step.

FIG. 3 is a side cross-sectional view schematically illustrating a wig according to the one embodiment of the present disclosure.

FIG. 4A is a view (photograph) showing optical fibers attached to an emission side of a light source in a third example.

FIG. 4B is a view (photograph) showing a state in which the imitation hairs configured with optical fibers in the third example are emitting light.

Description of Embodiments

[0010]

Hereinafter, an embodiment and examples for carrying out the present disclosure will be described with reference to the drawings. Note that a wig base and a wig described below are for giving shape to the technical idea of the present disclosure, and the present disclosure is not limited to the followings as long as there is no specific description to limit the disclosure. Sizes, positional relationships, and the like of the members illustrated in the drawings may be exaggerated to clarify the description.

[0011]

(Method for manufacturing a wig imitation hair configured with an optical fiber according to one embodiment of present disclosure)

First, a method for manufacturing a wig imitation hair configured with an optical fiber according to one embodiment will be described with reference to FIGS. 1A to 1D. FIG. 1A is a schematic diagram for describing a first step of manufacturing the wig imitation hair configured with an optical fiber according to the one embodiment of the present disclosure, FIG. 1B is a schematic diagram for describing a second step, FIG. 1C is a schematic diagram for describing a third step, and FIG. 1D is a schematic diagram for describing a fourth step.

[0012]

<First step>

First, a description will be given on the first step of fixing a plastic optical fiber on a deformable core member 50 by spirally winding the plastic optical fiber P around the core member 50.

The plastic optical fiber P used in the present embodiment has a core portion made of polymethyl methacrylate (PMMA) and a clad portion made of a fluorine plastic, and the plastic optical fiber P has an outer diameter of 0.25 mm. The plastic optical fiber P has an operation temperature of -20°C to 70°C. However, this is merely an example, and it is possible to use a plastic optical fiber having a known arbitrary specification and an arbitrary outer diameter.

[0013]

In the present embodiment, as the core member 50, a cloth rolled in a roll shape is used. As a cloth for forming the core member 50, it is preferable to use sheeting. The sheeting is a textile in which cotton is mainly plain woven. Since the sheeting is a soft material, it is possible to easily obtain a desired shape when the material is rolled in a roll shape. In addition, since the shape is easily deformed depending on how the plastic optical fiber P is wound, the winding shape of the plastic

optical fiber P can be easily deformed. In addition, since the sheeting has a low thermal conductivity, the sheeting has a characteristic that the sheeting is not heated to high temperatures when heated in a drying furnace.

[0014]

However, the material of the cloth is not limited to the sheeting, and any other cloth materials can be used as long as the cloth materials are soft materials having a low thermal conductivity.

Furthermore, the core member 50 to be used is not limited to a cloth rolled in a roll shape, and if a deformable core material is used, it is possible to use an elastic material such as silicon or polyethylene foam having a low thermal conductivity to form a rod-shaped core member. In that case, the core member is preferably formed not in a columnar shape but in a shape whose outer diameter varies in the longitudinal direction.

[0015]

As for the dimensions of the core member 50, it is possible to exemplify that the plastic optical fiber P is spirally wound at a pitch of about 5 cm when the core member 50 has the outer diameter of about 10 cm and the length of about 50 cm. The dimensions of the core member 50 and the winding pitch depend on the length of a imitation hair and the desired shape of a wave, but it is

preferable that the outer diameter of the core member 50 is within a range from 3 cm to 10 cm, the length is within a range from 20 cm to about 80 cm, and the winding pitch is within a range of 2 cm to 10 cm.

[0016]

When the plastic optical fiber P is spirally wound, the winding pitch does not have to be constant, but the winding pitch can be randomly varied or the winding pitch can be increased (or decreased) from one end toward the other end of the core member 50.

As described above, since the plastic optical fiber P is spirally wound around the deformable core member 50 such as a core member in which a cloth is rolled in a roll shape or a core member made of an elastic material, the core member 50 is easily deformed depending on how the plastic optical fiber P is wound (winding strength), so that the winding shape of the plastic optical fiber P can be varied to form a variously changed wave having a natural appearance.

[0017]

Next, after the plastic optical fiber P is spirally wound around the core member 50, both end parts are fixed by stopping members 52. In the present embodiment, string-shaped members are used as the stopping members 52 for fixing the spirally wound plastic optical fiber P to the

core member 50. However, each stopping member 52 is not limited to a string-like member, and an adhesive tape having heat resistance can be used for fixing, or any other known member can be used for fixing.

[0018]

<Second step>

Next, a description will be given on the second step of heating the core member 50 around which the plastic optical fiber P is wound by holding the core member 50 in a housing 60 having an internal temperature of more than or equal to 70°C and less than or equal to 90°C for a predetermined period of time. The second step can add a predetermined wave to the plastic optical fiber P.

In the present embodiment, a convection dryer is used as the housing 60 for heating the core member 50 around which the plastic optical fiber P is wound. By using the convection dryer, the inside of the housing 60 can be maintained at a uniform temperature. As a result, the plastic optical fiber P wound around the core member 50 can be entirely heated uniformly in the housing 60.

[0019]

Basically, the internal temperature of the housing 60 is preferably constant, but can be gradually changed depending on the application. Even in that case, the entire plastic optical fiber P wound around the core member

50 can be uniformly heated in the housing 60.

The housing 60 for heating the core member 50 around which the plastic optical fiber P is wound is not limited to a convection dryer, and any dryer, heater, or the like can be used as long as the internal space can be made uniform at a temperature of 60°C to 120°C.

[0020]

(First example)

Here, a description will be given on a first example performed to find optimum heating temperatures for the plastic optical fiber P in order to add a natural wave to the plastic optical fiber P.

The internal temperature of the housing 60 that was a convection dryer was set to 70°C, 80°C, 90°C, 100°C, and 110°C at which the plastic optical fiber P was expected to be soften. As the core member 50, sheeting rolled in a roll shape was used. Then, the core member 50 around which the plastic optical fiber P was wound was held in the housing 50 for about one hour to be heated, and then cooled down to a normal temperature, and the plastic optical fiber P was removed from the core member 50 and was observed in detail. The results of the observation are shown below.

[0021]

(1) When heated at 70°C

No damage was observed in the plastic optical fiber

P, and a natural wave was obtained. However, there was a tendency that the added wave was slightly weak.

(2) When heated at 80°C

No damage was observed in the plastic optical fiber P, and a natural wave was obtained. The added wave was not too strong and not too weak, in other words, almost optimal.

(3) When heated at 90°C

Generally, a good wave was added. Note that there was observed no such damage that would lead to breakage or the like in the plastic optical fiber P, but there was a tendency that the plastic optical fiber P was less flexible.

(4) When heated at 100°C

Loss of flexibility was observed in the plastic optical fiber P, and a slightly welded part was generated. However, a sufficient wave was added, and it was determined that the plastic optical fiber P was practically usable.

(5) When heated at 110°C

The plastic optical fiber P was completely welded and unusable.

[0022]

Based on the above test results, regarding the internal temperature of the housing 50 that heats the plastic optical fiber P, the followings have been found:

(a) more than or equal to 70°C and less than or equal to 100°C is applicable,

(b) more than or equal to 70°C and less than or equal to 90°C is preferable, and

(c) around 80°C, for example, 80°C±5°C is more preferable.

With respect to the heating time, a sufficient wave was not added in less than or equal to 45 minutes, and even when heating was performed for more than one hour, there was no significant change from the case of one hour. Therefore, it has been found that heating is preferably performed for approximately one hour.

[0023]

Note that when a solid string was used as the core member 50 instead of a cloth rolled in a roll shape, the temperature of the string-shaped core member got excessively high, and the plastic optical fiber P was damaged. This fact also revealed that the core member 50 in which a cloth is rolled in a roll shape is effective.

[0024]

<Second step (continuation)>

Based on the above results of the first example, in the second step in the present embodiment, the core member 50 around which the plastic optical fiber P is wound is heated with the core member 50 is being held in a housing

60 having an internal temperature of more than or equal to 70°C and less than or equal to 90°C for a predetermined period of time. In the case of using the core member 50 in which a cloth is rolled in a roll shape, the thermal conductivity of the material itself is low, and the thermal conductivity of the core member 50 can be kept low by an air layer between cloth layers so that a natural wave can be added without damaging the plastic optical fiber P. Even when an elastic material such as silicon or polyethylene foam having low thermal conductivity is used as the core member, it is considered that a natural wave can be applied without damaging the plastic optical fiber P.

[0025]

Further, the inventors have found the following fact. When, in the second step, the core member 50 around which the plastic optical fiber P is wound is heated for a certain period of time, is then once cooled to a room temperature, and is again heated for a certain period of time to fix the shape of the wave added to the plastic optical fiber P, so that a wave that cannot disappear even in a long period of use is formed.

[0026]

In particular, it has been found that when heating is performed under the following condition, it is possible

to add a gentle wave that has a natural appearance and does not disappear even in a long period of use.

Specifically, it has been found that the following process is more preferred. In the second step, the core member 50 around which the plastic optical fiber P is wound is held and heated in the housing 60 having an internal temperature of $80^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for about one hour, then is once cooled to a normal temperature, and is held and heated again in the housing 60 having an internal temperature of $80^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for approximately one hour.

[0027]

<Third step>

Next, the third step of cooling the heated plastic optical fiber P and removing the plastic optical fiber P from the core member 50 will be described. The core member 50 around which the plastic optical fiber P is wound is taken out from the housing 60, and the plastic optical fiber P is removed from the core member 50 after waiting until the temperature drops to a normal temperature. As a result, it is possible to obtain the wig imitation hair 2 configured with the optical fiber P to which a natural wave is added.

[0028]

<Fourth step>

Next, a description will be given on a fourth step

of pressing a plurality of places on the surface of the plastic optical fiber P that is removed from the core member 50 and is to become the wig imitation hair 2. In the present embodiment, as illustrated in FIG. 1D, a plurality of places on the surface of the plastic optical fiber P are lightly sandwiched and pressed with scissors S. As a result, when the plastic optical fiber P to become the wig imitation hair 2 is attached to a light source to cause the plastic optical fiber P to emit light, light leaks from the core at the pressed places, and the plastic optical fiber P can be therefore made to emit light more brightly. That is, bright spots can be provided at random positions on the wig imitation hair 2 configured with the plastic optical fiber P.

[0029]

However, random bright places can be provided not only by the method of pressing with scissors S but also by a method of filing the surface of the plastic optical fiber P to become the wig imitation hair 2 with sandpaper or the like. Further, random bright places can be provided also by performing shot blasting or sand blasting on the surface of the plastic optical fiber to become the wig imitation hair 2. In that case, by appropriately setting a shot pressure, it is possible to provide a large number of bright spots at a time.

[0030]

(Second example)

Next, with reference to FIGS. 2A and 2B, a description will be given on a second example performed to find an optimal core member 50 around which a plastic optical fiber P is wound in order to add a natural wave to the plastic optical fiber P. FIG. 2A is a view (photograph) showing the second example and shows the example and a comparative example in the first step, and FIG. 2B shows the example and the comparative example after the third step.

[0031]

In the first step shown in FIG. 2A, the example is a core member 50 formed by rolling sheeting (cloth) in a roll shape. Around the core member 50, a plastic optical fiber P is spirally wound and is fixed thereto. On the other hand, in the comparative example, a plastic optical fiber P is spirally wound around and fixed to a core member 150 using a curler to be used for curling hair.

[0032]

The second step was performed in which the core member 50 and the core member 150 around which the plastic optical fibers P were wound were heated by being held in the housing 60 having an internal temperature of $80^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for approximately one hour and were then cooled. After

that, the third step was performed in which the plastic optical fibers P were removed from the core member 50 and the core member 150. FIG. 2B shows the imitation hair 2 configured with the plastic optical fiber P according to the example after the third step and the imitation hair 102 configured with the plastic optical fiber P according to the comparative example.

As is apparent from FIG. 2B, in the example, a natural wave is formed. However, in the comparative example, the wave has a coil shape with a very small pitch, and it has been found that it is practically difficult to use the wave as an imitation hair. It is considered that the small pitch is due to an insufficient length of the curler; however, it is considered that the unnatural shape like a coil shape is caused by the curler, which is a less deformable member.

[0033]

As described above, in the case where the core member 50 is formed by rolling a cloth in a roll shape, a shape is obtained whose cross-sectional shape and outer diameter are irregularly changed depending on regions; therefore, by winding a plastic optical fiber P around the core member, it is possible to form a wave having a more natural appearance in which the cross-sectional shape and the outer diameter are irregularly changed. In addition,

since the shape of the core member 50 always changes every time the cloth is rolled in a roll shape, it is possible to form a wave in various shapes slightly changed in a similar manner as a real hair. Further, since there is an air layer between layers of the rolled cloth, the core member 50 is easily deformed depending on the strength of winding of the plastic optical fiber P, so that it is possible to easily change the wave to be formed.

[0034]

Also from the viewpoint of thermal conductivity, since the air layer functioning as a heat insulating material is present between the layers of the rolled cloth, the thermal conductivity of the core member 50 can be lowered effectively. The inventors conducted a test in which a solid string was used as the core member and a plastic optical fiber P was wound thereon and heated, and there occurred a problem that the temperature of the string-shaped core member excessively rose and the plastic optical fiber P was therefore damaged. It is considered that, other than winding a cloth, it is possible to use a material such as silicon or polyethylene foam having low thermal conductivity.

[0035]

As described above, the wig imitation hair 2 configured with an optical fiber can be manufactured by

performing the following steps: a first step of fixing a plastic optical fiber P on a deformable core member 50 by spirally winding the plastic optical fiber P around the core member; a second step of heating the core member 50 around which the plastic optical fiber P is wound by holding the core member 50 in a housing 60 having an internal temperature of more than or equal to 70°C and less than or equal to 90°C for a predetermined period of time, and a third step of cooling the heated plastic optical fiber P and removing the plastic optical fiber P from the core member.

[0036]

In this method, unlike a case of a curler or a rod, the core member 50 is easily deformed depending on how the plastic optical fiber P is wound, and the entire plastic optical fiber P wound around the core member 50 is uniformly heated in the housing 60, so that it is possible to form the wig imitation hair 2 configured with the optical fiber P having a gentle natural wave without giving any damage.

[0037]

Furthermore, when the core member 50 is formed by rolling a cloth in a roll shape, the core member 50 is easily deformed depending on how the plastic optical fiber P is wound, and it is possible to obtain irregularly

changed various winding shapes, so that a wave having a more varied natural appearance can be formed. Furthermore, since the air layer between the cloth layers can reduce the thermal conductivity of the core member 50, the temperature rise of the core member 50 at the time of heating can be reduced, and it is possible to effectively reduce damage to the plastic optical fiber P.

In particular, when a soft material having a low thermal conductivity such as sheeting is used as the cloth, it is possible to form a gentle natural wave with more variations.

[0038]

In the second step, it is preferable that the core member 50 around which the plastic optical fiber P is wound be heated for a certain period of time, then be once cooled to a normal temperature, and be again heated for a certain period of time. By being treated in this way, the shape of the formed wave can be fixed, so that the wave will hardly disappear even in a long period of use.

In particular, the following process is more preferred. In the second step, the core member 50 around which the plastic optical fiber P is wound is held and heated in the housing 60 having an internal temperature of $80^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for approximately one hour, then cooled once to a normal temperature, and is held and heated again in the

housing 60 having an internal temperature of $80^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for about one hour. By treating in this way, it is possible to reliably form, without giving any damage, the wig imitation hair 2 configured with the optical fiber P having a gentle natural wave that hardly disappears even in a long period of use.

[0039]

Further, it is preferable to press, in the fourth step, a plurality of arbitrary places on the surface of the plastic optical fiber P that is removed from the core member 50 and is to become the wig imitation hair 2. By treating in this way, it is possible to provide, at various positions, places that emit light brightly when the wig imitation hairs 2 are attached to a light source.

[0040]

(Wig according to one embodiment of the present disclosure)

Next, with reference to FIG. 3, a description will be given on a wig, according to one embodiment, using wig imitation hairs manufactured by the above manufacturing method. FIG. 3 is a side cross-sectional view schematically illustrating a wig according to the one embodiment of the present disclosure.

A wig 40 according to the present embodiment is formed by attaching, to a wig base 10, the wig imitation

hairs 2 manufactured by the above manufacturing method. The wig base 10 according to the present embodiment is configured with two surface portions of a front face portion 12 and a rear face portion 14, and the front face portion 12 and the rear face portion 14 are sewn to each other at the outer edge parts. The front face portion 12 has a net-shaped structure configured with a filament F. The wig imitation hairs 2 are each configured with: a first region 2A that passes through the net-shaped front face portion 12 and is located on the front surface side of the front face portion 12; and a second region 2B located on the rear surface side of the front surface portion 12. The first region 2A functions as a imitation hair constituting the wig together with a normal imitation hair G that is not an optical fiber.

[0041]

The wig imitation hairs 2 are each fixed to the filament F of the net-shaped front face portion 12 with a thread-shaped fixing member 16 at a place where each wig imitation hair 2 passes through the net-like surface portion 12. With this arrangement, even if the first regions 2A extending on the outside of the wig base 10 are pulled, the wig imitation hairs 2 do not fall off. The normal imitation hair G is tied to the filament F of the front face portion 12 by an arbitrary known implantation

method.

An end of the second region 2B is attached to an emission side of a light source 20 configured with a light emitting diode (LED). Since both the second region 2B and the light source 20 are disposed in a space between the front face portion 12 and the rear face portion 14, the second regions 2B and the light source 20 do not touch a scalp of a wearer when the wig 40 is put on, and a sense of discomfort is therefore not given.

In a case where a white light source configured with LEDs that emit three primary colors of red, green, and blue is used as the light source 20, arbitrary color light can be emitted by changing the output of light of each color. In addition, the color of the emitted light can be temporally changed, and an attractive eye-catching presentation can be therefore realized.

[0042]

In the present embodiment, a bundle of the imitation hairs 2 configured with the five plastic optical fibers P (three of them are shown in the diagram) are attached to an emission surface of the light source 20. For example, ends of the imitation hairs 2 can be attached to the emission surface of the light source 20 with an adhesive having excellent translucency. However, the present embodiment is not limited to the above configuration, and the imitation

hairs 2 can be fixed by using a dedicated fixing member or by pressing the ends of the imitation hairs 2 against the emission surface of the light source 20 and covering the connection portions between the plastic optical fibers P and the light source 20 with a heat-shrinkable tape.

[0043]

The light source 20 is connected to a power supply 30 via a cable 22. In the diagram, the power source 30 is illustrated to be disposed outside the wig base 10, but the power supply 30 can be disposed in the space between the front face portion 12 and the rear face portion 14.

Note that, when the light source 20 is disposed at the top of a head, light is concentrated on the top of the head, and an unnatural appearance is exhibited. Therefore, the light source 20 is preferably disposed at a position that is in the vicinity of the outer edge of the space between the front face portion 12 and the rear face portion 14 and is positioned at the collar part when the wig 40 is put on. The power supply 30 is also preferably disposed in the vicinity of the outer edge of the space between the front face portion 12 and the rear face portion 14. To prevent the light source 20 and the power supply 30 from moving when put on, it is preferable to provide a pocket so that the light source 20 and the power supply 30 are stored in the pocket.

[0044]

As a result, when the light source 20 emits light from the emission surface, the light is conducted from the second regions 2B of the imitation hairs 2 to the first regions 2A, and it can be visually recognized that the second region 2 extending from the wig base 10 are emitting light. Furthermore, in a case where the pressed places are provided on the second regions 2 by the above-described fourth step, the pressed places can be made to emit light brightly.

[0045]

The following example shows the number of the imitation hairs 2 configured with the plastic optical fibers P attached to the wig base 10. It can be considered that the wig base 10 is divided into 15 blocks and the light source 20 is disposed in each block. 12 sets of imitation hair bundles each including the five imitation hairs 2 are attached to each light source 20, and a total of 900 ($= 5 \times 12 \times 15$) of the imitation hairs 2 configured with the plastic optical fibers P can be attached to the wig base 10. However, this is just an example, and it is possible to use the wig 40 configured with arbitrary numbers of the imitation hairs 2 configured with the plastic optical fibers P and light sources 20, depending on purpose of use.

[0046]

As described above, the wig 40 in which the wig imitation hairs 2 manufactured by the above manufacturing method are attached to the wig base 10 can have a gentle natural wave.

In particular, each wig imitation hair 2 has: the first region 2A that passes through the front face portion 12 of the wig base 10 and is located on the front surface side of the front face portion 12; and the second region 2B located on the rear surface side of the front face portion 12, and an end of the second region 2B is attached to the emission side of the light source 20; therefore, it is possible to provide a wig that is eye-catching and excellent in aesthetic appearance with the first regions 2A made to emit light.

[0047]

(Third example)

Next, with reference to FIGS. 4A and 4B, a description will be given on a third example, in which a wig is actually manufactured. FIG. 4A is a view (photograph) showing optical fibers attached to an emission side of a light source in the third example. FIG. 4B is a view (photograph) showing a state in which imitation hairs configured with optical fibers in the third example are emitting light.

FIG. 4A shows that 12 sets of imitation hair bundles each including the five imitation hairs 2 configured with the plastic optical fibers P are attached to the emission side of the light source 20. FIG. 4A shows the front face portion 12, the imitation hairs 2 configured with the plastic optical fibers P, the light source 20, and the cable 22 when the rear face portion 14 is removed.

[0048]

FIG. 4B is a view of the wig 40 as viewed from the outside, and shows that power is supplied to the light source 20 and the imitation hairs 2 configured with the plastic optical fibers P are emitting light. It can be seen that gentle natural waves are added to the imitation hairs 2 configured with the plastic optical fibers P. In addition, it can be seen that the first regions 2A of the imitation hairs 2 configured with the plastic optical fibers P are emitting light, and in particular, the pressed places formed in the fourth step are each emitting light more brightly in a spot manner.

As described above, the third example has demonstrated that, since the imitation hairs 2 configured with the plastic optical fibers P have gentle natural waves and emit light, the imitation hairs 2 can achieve a wig that is eye-catching and excellent in aesthetic appearance.

[0049]

As described above, the embodiment of the present disclosure has been described. However, the content of the present disclosure may be changed in details of the configuration, and combinations of elements, change of order, and the like in the embodiment can be achieved without departing from the claimed scope and spirit of the present disclosure.

Reference Signs List

[0050]

2 imitation hair configured with a plastic
optical fiber

2A first region

2B second region

10 wig base

12 front face portion

14 rear face portion

16 fixing member

20 light source

22 cable

30 power supply

40 wig

50 core member

52 stopping member

60 housing

102 imitation hair configured with a plastic

optical fiber (comparative example)

150 core member (comparative example)

P plastic optical fiber

G imitation hair

F filament

S scissors

CLAIMS

1. A method for manufacturing a wig imitation hair configured with an optical fiber, comprising:

a first step of fixing a plastic optical fiber on a deformable core member by spirally winding the plastic optical fiber around the core member, the core member being formed of a cloth rolled in a roll shape;

a second step of heating the core member around which the plastic optical fiber is wound by holding the core member in a housing having an internal temperature of $80^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for a predetermined period of time; and

a third step of cooling the heated plastic optical fiber and removing the plastic optical fiber from the core member,

wherein the plastic optical fiber includes a core portion made of polymethyl methacrylate (PMMA) and a clad portion made of fluorine plastic.

2. The method for manufacturing a wig imitation hair configured with an optical fiber according to claim 1, wherein the cloth is sheeting.

3. The method for manufacturing a wig imitation hair configured with an optical fiber according to claim 1 or 2, wherein in the second step, after the core member around which the plastic optical fiber is wound is heated for a certain period of time, the core member around which the

plastic optical fiber is wound is once cooled and is again heated for a certain period of time.

4. The method for manufacturing a wig imitation hair configured with an optical fiber according to claim 3, wherein in the second step, after the core member around which the plastic optical fiber is wound is held and heated for approximately one hour, the core member around which the plastic optical fiber is wound is once cooled and is again heated by being held in the housing having an internal temperature of $80^{\circ}\text{C}\pm 5^{\circ}\text{C}$ for approximately one hour.

5. The method for manufacturing a wig imitation hair configured with an optical fiber according to any one of claims 1 to 4, the method further comprising a fourth step of pressing a plurality of arbitrary places on a surface of the plastic optical fiber that is removed from the core member and is to become a wig imitation hair.

6. A wig comprising:

a wig base; and

the wig imitation hair manufactured by the method according to any one of claims 1 to 5, the wig imitation hair being attached to the wig base.

7. The wig according to claim 6, wherein the wig imitation hair includes:

a first region that passes through a front face

portion of the wig base and is located on a front surface side of the front face portion; and

a second region located on a rear surface side of the front face portion,

wherein an end of the second region is attached to an emission side of a light source.