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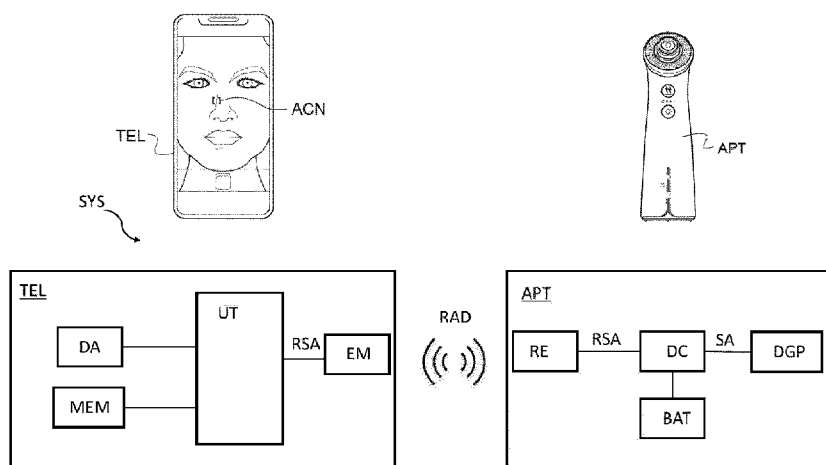
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(54) Title: MONITORING OF TREATMENT HISTORY AND THE ADAPTATION THEREOF

Fig. 1



(57) **Abstract:** A system is proposed comprising: - an atmospheric-pressure plasma generation device (DGP); - a control device (DC) configured to control the plasma generation device (DGP) using a supply signal in accordance with a setting for performing a treatment on an element of interest of the skin; - a processing unit (UT) configured to: o temporally monitor the results of the treatment on the element of interest; o define the setting of the supply signal as a function of the results of the temporal monitoring; o transmit the defined setting of the supply signal to the control device (DC).

DESCRIPTION**TITLE: MONITORING OF TREATMENT HISTORY AND THE
ADAPTATION THEREOF**

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The invention particularly relates to a system for treating element(s) of interest of the skin of a user, in particular acne pimple(s), using atmospheric-pressure plasma.

10 Atmospheric-pressure plasma (also known as “cold plasma” or by the expression “non-thermal plasma”) can interact with biological tissues and cells.

Among the possible applications, atmospheric-pressure plasma can be used in biology and medicine for sterilization, disinfection, decontamination and wound healing.

15 Thus, atmospheric plasma treatment apparatuses are known that are configured to meet these various applications.

In particular, some of these apparatuses are configured for cosmetic treatment of the skin using atmospheric-pressure plasma.

Such apparatuses are therefore configured to apply a plasma to the surface of the skin, and in particular to the surface of the face, for acne treatment, for example.

20 For example, the US patent application published under number US 2020/0038673 describes such a cosmetic treatment apparatus.

Such apparatuses comprise an atmospheric-pressure plasma generation device configured to be able to generate atmospheric-pressure plasma from an electrical control signal.

25 Such cosmetic skin treatment apparatuses are generally configured to allow only one or two settings for the amount of plasma that can be instantaneously generated by the plasma generation device.

30 The possibilities for setting the amount of plasma that can be instantaneously generated are therefore limited. However, for some treatments, it can be preferable for an amount of plasma to be applied for which the apparatus does not provide a setting.

Furthermore, the setting is enabled by at least one push button or thumb wheel provided on the apparatus.

Thus, for such treatment apparatuses, the user selects the setting of the plasma generation device themselves by pressing the push button corresponding to this setting.

However, the user is not always aware of the correct setting for their treatment. The use of such treatment apparatuses therefore can prove to be complex for the user.

Furthermore, the effectiveness of a setting for the amount of plasma in a treatment varies between users. Thus, a setting can be optimized for one user but not
5 for other users.

The aim of the invention is to overcome these disadvantages.

In particular, the invention relates to a system comprising:

- an atmospheric-pressure plasma generation device;
- a control device configured to control the plasma generation device using a
10 supply signal in accordance with a setting for performing a treatment on an element of interest of the skin, for example, an acne pimple;
- a processing unit configured to:
 - o temporally monitor the results of the treatment on the element of interest;
 - o define the setting of the supply signal as a function of the results of the
15 temporal monitoring;
 - o transmit the defined setting of the supply signal to the control device.

Setting the supply signal allows the plasma generation by the generation device to be set.

Preferably, setting the supply signal allows a total duration, a frequency and
20 a power of this supply signal to be defined.

Such a system allows the setting of the supply signal to be adapted as a function of the results obtained by the treatment over time.

In particular, at the start of the treatment, an initial setting of the supply signal
25 can be predefined or even randomly selected.

This initial setting may not be the most suitable setting for treating the element of interest of the skin of the user.

Thus, by adapting the setting during treatment as a function of the results that are obtained, it is possible to make the treatment more effective, and therefore reduce
30 the treatment period for the element of interest.

Therefore, the supply signal is set as a function of the results that are obtained during the treatment on the skin of the user.

In an advantageous embodiment, the processing unit for performing the temporal monitoring is configured to:

- obtain physiognomic data of the element of interest with which a temporal indication is associated; then

- store these physiognomic data and their temporal indication in a memory.

5 For example, the physiognomic data comprises dimensions of the element of interest and/or a level of inflammation of the element of interest and/or a level of sebum retention.

10 Preferably, the processing unit is configured to compare, each time physiognomic data is obtained, these latest obtained physiognomic data with previously obtained physiognomic data, for example, with the penultimate obtained physiognomic data, so as to compute a progression gradient for the treatment.

The progression gradient for the treatment allows the effectiveness of the setting that is used to be assessed.

15 Advantageously, the processing unit is configured to associate a progression gradient with each setting that is used, which progression gradient is computed after this setting has been used, and to store this setting and the associated progression gradient in the memory.

In an advantageous embodiment, the processing unit is configured to increase the setting of the supply signal when the progression gradient is below a predefined threshold.

20 In an advantageous embodiment, the processing unit is configured to define the setting associated with the highest progression gradient as the optimized setting.

25 The physiognomic data of the element of interest can be directly entered by the user. However, preferably the system also comprises an image acquisition device configured to acquire several images of the element of interest for temporally monitoring the results of the treatment on this element of interest. The processing unit is then configured to obtain said physiognomic data by extracting these physiognomic data from the acquired images.

30 Extracting physiognomic data from images of the element of interest makes it easier for the user to use the system. Indeed, the user does not have to enter these physiognomic data themselves, which can be difficult for the user to measure.

In an advantageous embodiment, the system comprises:

- a multifunction telephone comprising the image acquisition device, the processing unit and said memory;

- a processing apparatus comprising the control device and the plasma generation device.

5 In an advantageous embodiment, the multifunction telephone comprises a transmitter configured to send the adapted setting of the supply signal to a receiver of the processing apparatus via a wireless transmission.

In an advantageous embodiment, the transmitter of the multifunction telephone is configured to send the adapted setting of the supply signal to the receiver of the treatment apparatus in accordance with the Bluetooth® communication standard.

10 The invention also relates to a method for setting a plasma generation device for treating an element of interest of the skin of a user, comprising:

- temporally monitoring the results of the treatment on the element of interest;

15 - setting the plasma generation device as a function of the results of the temporal monitoring.

In an advantageous embodiment, the temporal monitoring comprises obtaining physiognomic data of the element of interest with which a temporal indication is associated.

20 Advantageously, the physiognomic data comprises dimensions of the element of interest and/or an inflammation level of the element of interest and/or a level of sebum retention.

25 Preferably, the temporal monitoring comprises, each time physiognomic data is obtained, a computation of a progression gradient of the treatment on the basis of a comparison of the last physiognomic data obtained with previously obtained physiognomic data.

In an advantageous embodiment, each setting that is used is associated with a progression gradient computed after this setting has been used.

In an advantageous embodiment, the setting of the supply signal is increased when the progression gradient is below a predefined threshold.

30 Preferably, the method comprises defining an optimized setting, with the optimized setting being the setting associated with the highest progression gradient.

Advantageously, obtaining physiognomic data of the element of interest comprises:

- acquiring at least one image of the element of interest; and

- extracting physiognomic data of the element of interest from said at least one acquired image.

The invention also relates to a method for setting a supply signal delivered by the control device of a system as described above, in particular for treating an element of interest of the skin of a user, the method comprising:

- temporally monitoring the results of the treatment on the element of interest using the processing unit;
- defining the setting of the supply signal as a function of the results of the temporal monitoring using the processing unit;
- transmitting the defined setting of the supply signal to the control device using the processing unit.

The invention also relates to a computer program product comprising instructions which, when the program is executed by a processing unit, cause the processing unit to implement a method as described above.

Further advantages and features of the invention will become apparent with reference to the detailed description of embodiments, which are by no means limiting, and from the appended drawings, in which:

[Fig 1],

[Fig 2] schematically show embodiments and implementations of the invention.

Figure 1 schematically shows a system SYS according to one embodiment of the invention.

The system SYS comprises a multifunction telephone TEL and a treatment apparatus APT, in this case cosmetic treatment.

Such a system SYS is configured to treat elements of interest of the skin of a user that are sensitive to atmospheric-pressure plasma.

By way of a non-limiting example, throughout the remainder of the description, such elements of interest are acne pimples ACN.

However, other elements of interest of the skin of a user can be contemplated. For example, the elements of interest of the skin can be rashes, pore size, micro-injuries or even dark spots.

The cosmetic treatment apparatus APT comprises an atmospheric-pressure plasma generation device DGP. The atmospheric-pressure plasma generation device

DGP is configured to produce atmospheric-pressure plasma outside the apparatus APT from a supply signal SA.

5 In particular, the atmospheric-pressure plasma generation device DGP conventionally comprises a live electrode and a ground electrode, as well as a dielectric barrier placed against the live electrode. In an advantageous embodiment, the ground electrode is the biological surface on which the plasma generation device is applied. This biological surface thus acts as a floating ground electrode. An atmospheric-pressure plasma can be generated between these two electrodes. In particular, when the live electrode is powered relative to the ground electrode by the supply source, a
10 plasma is generated from a plasma gas located between the electrodes. In an advantageous embodiment, the gas is the ambient air located between the dielectric barrier and the floating ground electrode (the treated biological surface). The plasma gas can contain at least one noble gas, such as helium or argon or neon.

15 The cosmetic treatment apparatus APT further comprises a control device DC configured to deliver the supply signal SA to the plasma generation device DGP.

In particular, the control device DC is adapted to deliver the supply signal SA from the energy stored in a battery BAT of the cosmetic treatment apparatus APT.

20 The supply signal SA delivered to the plasma generation device DGP allows the control device DC to control the amount of plasma instantaneously generated by this plasma generation device DGP.

Preferably, the supply signal SA is a pulse width modulation (PWM) signal. The amount of plasma that is instantaneously generated can then vary as a function of a duty cycle of the supply signal SA.

25 In addition, the control device DC has an input configured to receive a setting RSA of the supply signal. The control device DC is then configured to produce different supply signals SA depending on the setting RSA that it receives as input.

The setting of the supply signal allows a total duration, a frequency and a power of this supply signal to be defined.

30 For example, when the supply signal SA is a PWM signal, the control device DC can be configured to modify the duty cycle of the supply signal SA according to the setting RSA that it receives as input.

As an alternative embodiment, the control device DC can be configured to modify the voltage amplitude of the supply signal SA according to the setting RSA that it receives as input.

More specifically, the apparatus APT has a receiver RE configured to be able to receive a setting RSA of the supply signal that is transmitted by a transmitter EM of the multifunction telephone. The receiver RE is electrically connected to the control device DC so as to be able to transmit the setting RSA of the supply signal thereto.

5 The setting RSA can be sent to the receiver RE by the transmitter EM using a wireless transmission RAD, for example, using the Bluetooth® communication standard.

10 The multifunction telephone TEL is configured to determine a setting RSA of the supply signal that is adapted to allow an amount of plasma to be generated that is suitable for treating an acne pimple of a user.

In particular, the multifunction telephone TEL comprises a processing unit UT. The processing unit UT can be a processor or a microprocessor, for example. The multifunction telephone TEL also comprises a memory MEM.

15 The processing unit UT is configured to temporally monitor the results of a treatment of an acne pimple ACN.

More specifically, the processing unit UT is configured to perform this temporal monitoring on the basis of images of the acne pimple ACN acquired over time during the treatment.

20 To this end, the multifunction telephone TEL comprises an image acquisition device DA. The image acquisition device DA conventionally can be a camera integrated in the multifunction telephone TEL.

The image acquisition device DA is therefore adapted to be able to acquire several images of an acne pimple over time during a treatment.

25 In particular, an image of the acne pimple can be acquired regularly, for example, on a daily basis.

The processing unit UT is configured to extract physiognomic data of the acne pimple from an acquired image of the acne pimple.

30 In particular, the physiognomic data of the acne pimple can be dimensions of the acne pimple and/or a level of inflammation and/or a level of sebum retention. The physiognomic data of the acne pimple can also include an indication of the position of the acne pimple on the face, and a date of appearance of the acne pimple.

The physiognomic data extracted from an image are associated with a temporal indication relating to an acquisition time of the image. For example, the temporal indication can be a date of acquisition of the image.

The processing unit UT is also configured to store the extracted physiognomic data and its temporal indication in the memory MEM.

5 In order to temporally monitor the results of the treatment, the processing unit UT is configured to compare, each time physiognomic data is extracted, the physiognomic data extracted from the last acquired image with the physiognomic data extracted from a previously acquired image, for example, the penultimate acquired image.

10 On the basis of this comparison, the processing unit UT is configured to compute a progression gradient of the treatment on the basis of the comparison undertaken between the physiognomic data.

This progression gradient of the treatment allows the effectiveness of the setting that is used to be assessed.

Based on the computed progression gradient, the processing unit UT is configured to adapt a setting of the supply signal for the control device DC.

15 For example, the processing unit UT can be configured to adapt the setting of the supply signal on the basis of a comparison between the obtained progression gradient and a predefined threshold. As an alternative embodiment, the processing unit UT can be configured to adapt the setting of the supply signal on the basis of a comparison between the obtained progression gradient and a progression gradient computed after the acquisition of the penultimate image.

20 For example, the processing unit UT is configured to set a voltage amplitude of the supply signal delivered to the plasma generation device DGP. The processing unit can also set a frequency of the supply signal. Furthermore, the processing unit UT can also set a duty cycle of the supply signal, particularly when this supply signal is a PWM signal.

25 Once the setting of the supply signal is determined, the processing unit UT is configured to transmit this setting to the transmitter EM in order to send the setting to the processing apparatus.

30 In particular, when the setting is received by the receiver RE of the processing apparatus, the setting is transmitted to the control device DC. The control device DC is then configured to supply the plasma generation device DGP from a supply signal generated according to the received setting.

Furthermore, the processing unit UT is configured to store the progression gradients that are obtained for the various selected settings in the memory MEM.

On the basis of the various progression gradients stored in the memory MEM, the processing unit UT is configured to define an optimized setting of the supply signal. The optimized setting is the setting for which the progression gradient obtained from this setting is the highest.

5 Figure 2 describes a method for setting a supply signal delivered by the control device DC of the system described above for treating an acne pimple of a user.

The method comprises a first step 20, in which a first image of the acne pimple is acquired at the start of the treatment by the image acquisition device.

10 Subsequently, the method comprises a step 21, in which the processing unit UT extracts physiognomic data of the acne pimple from the acquired first image. This information can be pimple dimensions, a level of inflammation level and a level of sebum retention. A temporal indication of the acquisition time of the image is associated with these physiognomic data. The physiognomic data and their temporal indications are stored in the memory MEM.

15 Then, the method comprises a step 22, in which the processing unit UT defines an initial setting of the supply signal. This setting can be a predefined setting or can be randomly selected.

Subsequently, the method comprises a series of steps 23 to 29, which it regularly repeats in order to adapt the setting of the supply signal during the treatment.

20 In particular, the method comprises temporal monitoring ST of the treatment of the acne pimple on the basis of the images acquired at various times of the treatment, for example, every day.

Thus, the temporal monitoring ST comprises a step 23, in which the image acquisition device acquires a new image.

25 The temporal monitoring comprises a step 24, in which the processing unit UT obtains the image acquired by the image acquisition device. This image thus has been acquired at a given time of the treatment.

30 The temporal monitoring subsequently comprises a step 25, in which the processing unit UT extracts new physiognomic data of the acne pimple from the image acquired in step 23. A temporal indication of the time of image acquisition is associated with these new physiognomic data. The new physiognomic data and their temporal indications are stored in the memory MEM.

Next, the temporal monitoring comprises a step 26, in which the processing unit UT compares the physiognomic data extracted from the last acquired image with the physiognomic data extracted from the penultimate acquired image.

5 This comparison allows the processing unit UT to compute a progression gradient of the treatment. This progression gradient can be computed from a difference between the levels of inflammation extracted from the two images and/or a difference between the levels of sebum retention extracted from the two images and/or a difference between the dimensions of the pimple extracted from the two images.

10 The progression gradient of the treatment allows the effectiveness of a used setting to be assessed.

The processing unit UT then uses this progression gradient to adapt the setting of the supply signal.

The setting of the supply signal allows a total duration, a frequency and a power of this supply signal to be defined.

15 In particular, in step 27, the processing unit UT compares the progression gradient computed in step 26 to a predefined threshold or even to a previous progression gradient computed after the acquisition of the penultimate image.

Depending on the result of this comparison, the processing unit UT increases, reduces or maintains the setting of the supply signal.

20 For example, if the progression gradient is above the threshold or the previous progression gradient, the processing unit UT can decide to maintain the setting of the supply signal or even to decrease it.

25 Furthermore, if the progression gradient is below the threshold or the previous progression gradient, the processing unit UT can decide to increase the setting of the supply signal.

Then, in step 28, the processing unit UT transmits the adapted setting, via the transmitter EM, to the treatment device, and more specifically to the control device DC, by means of the receiver RE.

30 Subsequently, the processing unit assesses, in step 29, whether or not the treatment of the acne pimple has been completed. If the treatment is not complete, steps 23 to 29 are repeated.

At the end of the treatment, the method can comprise a step 30, in which the processing unit UT defines an optimized setting of the supply signal. This optimized

setting is the setting that allowed the highest progression gradient to be obtained during the treatment.

This optimized setting of the supply signal then can be used at the start of future treatments of other acne pimples of the user.

5 Of course, the present invention has the potential for various alternative embodiments and modifications that will become apparent to a person skilled in the art. For example, the processing unit UT can be configured to perform temporal monitoring of several acne pimples of the user. Indeed, the image acquisition device can be used to take an image of several acne pimples, in particular on the face of the
10 user. The processing unit UT then can be configured to identify a position on the face for each acne pimple. The processing unit UT thus can, for each acne pimple, associate and then store an identifier of the acne pimple, its position and its physiognomic data in the memory MEM. The processing unit UT thus can temporally monitor each pimple separately on the basis of this information that is stored in the memory.

15 Furthermore, the present invention is compatible with the invention that is the subject matter of the French patent application filed under No. 2009662 and/or with the invention that is the subject matter of the French patent application filed under No. 2009661.

CLAIMS

1. System comprising:
 - an atmospheric-pressure plasma generation device (DGP);
 - 5 - a control device (DC) configured to control the plasma generation device (DGP) using a supply signal in accordance with a setting for performing a treatment on an element of interest of the skin;
 - a processing unit (UT) configured to:
 - temporally monitor the results of the treatment on the element of interest;
 - 10 ○ define the setting of the supply signal as a function of the results of the temporal monitoring;
 - transmit the defined setting of the supply signal to the control device (DC).
2. System according to Claim 1, wherein the processing unit (UT) for
15 performing the temporal monitoring is configured to:
 - obtain physiognomic data of the element of interest with which a temporal indication is associated; then
 - store these physiognomic data and their temporal indications in a memory (MEM).
- 20 3. System according to Claim 2, wherein the physiognomic data comprises dimensions of the element of interest and/or a level of inflammation of the element of interest and/or a level of sebum retention.
4. System according to any one of Claims 2 or 3, wherein the processing unit is configured to compare, each time physiognomic data is obtained, said obtained
25 physiognomic data with previously obtained physiognomic data so as to compute a progression gradient of the treatment.
5. System according to Claim 4, wherein the processing unit (UT) is configured to associate a progression gradient with each setting that is used, which progression gradient is computed after this setting has been used, and to store this
30 setting and the associated progression gradient in the memory (MEM).
6. System according to any one of Claims 4 or 5, wherein the processing unit (UT) is configured to increase the setting of the supply signal when the progression gradient is below a predefined threshold.

7. System according to any one of Claims 5 or 6, wherein the processing unit (UT) is configured to define the setting associated with the highest progression gradient as the optimized setting.

5 8. System according to any of Claims 1 to 7, further comprising an image acquisition device (DA) configured to acquire a plurality of images of the element of interest for temporally monitoring the results of the treatment on this element of interest, and wherein the processing unit (UT) is configured to obtain said physiognomic data by extracting these physiognomic data from the acquired images.

9. System according to Claims 2 and 8, comprising:
10 - a multifunction telephone (TEL) comprising the image acquisition device (DA), the processing unit (UT) and said memory (MEM);
- a processing apparatus (APT) comprising the control device (DC) and the plasma generation device (DGP).

10. System according to Claim 9, wherein the multifunction telephone (TEL) comprises a transmitter (EM) configured to send the adapted setting of the supply signal to a receiver (RE) of the processing apparatus (APT) via a wireless transmission.

11. System according to Claim 10, wherein the transmitter (EM) of the multifunction telephone (TEL) is configured to send the adapted setting of the supply signal to the receiver (RE) of the processing apparatus (APT) in accordance with the Bluetooth® communication standard.

12. System according to Claims 1 to 11, wherein setting the supply signal allows a total duration, a frequency and a power of the supply signal to be defined.

13. Method for setting a plasma generation device for treating an element of interest of the skin of a user, comprising:
25 - temporally monitoring the results of the treatment on the element of interest;

- setting the plasma generation device as a function of the results of the temporal monitoring.

14. Method according to Claim 13, wherein the temporal monitoring comprises obtaining physiognomic data of the element of interest with which a temporal indication is associated.

15. Method according to Claim 14, wherein the physiognomic data comprises dimensions of the element of interest and/or a level of inflammation of the element of interest and/or a level of sebum retention.

16. Method according to any one of Claims 14 or 15, wherein the temporal monitoring comprises, each time physiognomic data is obtained, computing a progression gradient of the treatment on the basis of a comparison of the last obtained physiognomic data with previously obtained physiognomic data.

5 17. Method according to Claim 16, wherein each setting that is used is associated with a progression gradient computed after this setting has been used.

18. Method according to any one of Claims 16 or 17, wherein the setting of the supply signal is increased when the progression gradient is below a predefined threshold.

10 19. Method according to any one of Claims 17 or 18, comprising defining an optimized setting, the optimized setting being the setting associated with the highest progression gradient.

20. Method according to any of Claims 13 to 19, wherein obtaining physiognomic data of the element of interest comprises:

15 - acquiring at least one image of the element of interest; and
 - extracting physiognomic data of the element of interest from said at least one acquired image.

21. Method for setting a supply signal delivered by the control device (DC) of a system according to any of Claims 1 to 12, in particular for processing an element of interest of the skin of a user, the method comprising:

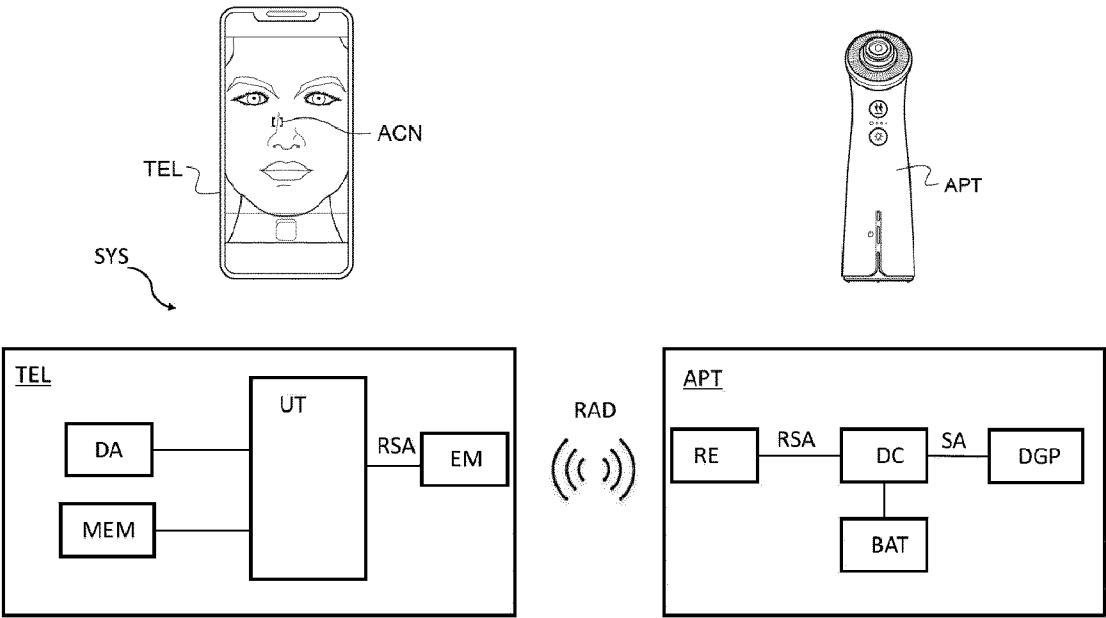
20 ○ temporally monitoring the results of the treatment on the element of interest using the processing unit (UT);

 ○ defining the setting of the supply signal as a function of the results of the temporal monitoring using the processing unit (UT);

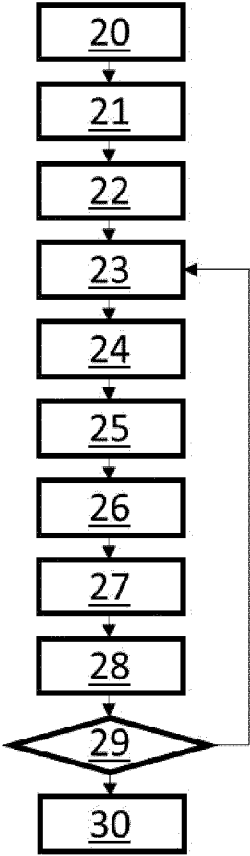
25 ○ transmitting the defined setting of the supply signal to the control device (DC) using the processing unit (UT).

22. Computer program product comprising instructions which, when the program is executed by a processing unit, cause the processing unit to implement a method according to any of claims 13 to 21.

[Fig. 1]



[Fig. 2]



INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2022/050234

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61N1/44 A61B5/00

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61N A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 101 929 360 B1 (JIN SEOK [KR]) 19 December 2018 (2018-12-19) paragraphs [0036] - [0128]; figures 1-4 -----	1-12, 22
X	WO 2020/091086 A1 (LILLYCOVER INC [KR]) 7 May 2020 (2020-05-07) paragraphs [0097] - [0112]; claims 12-13 -----	1, 22
X	US 2019/387973 A1 (BHAWALKAR JAYANT [US] ET AL) 26 December 2019 (2019-12-26) paragraphs [0186], [0261] - [0288]; claims 1, 9 -----	1, 22
A	US 2019/053365 A1 (KIM MIN GEE [KR]) 14 February 2019 (2019-02-14) paragraph [0065] -----	1-12, 22



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2022/050234

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: **13-21**
because they relate to subject matter not required to be searched by this Authority, namely:
see FURTHER INFORMATION sheet PCT/ISA/210
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims;; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 13-21

Rule 39.1(iv) PCT - Method of treatment of the human or animal being by therapy. Method claims 13-20 and 21 pertain to the setting of different devices for treating an element of interest of a user's skin, and therefore relate to the curing of diseases or malfunctions of the body in order to restore or maintain health; reference is also made to the description, p. 1, l. 12-13. It is therefore considered that claims 13-20 and 21 define different methods of treatment of the human or animal body by therapy, for which no international search needs to be carried out (Rule 39.1(iv) PCT).

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2022/050234

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