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Biophoton Patents

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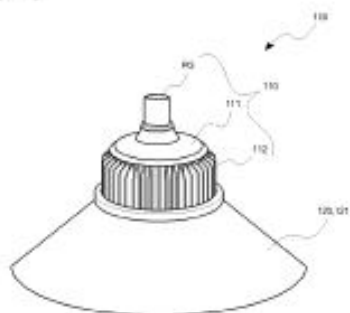
WO2017026567

LED LIGHTING SYSTEM FOR BIOPHOTON

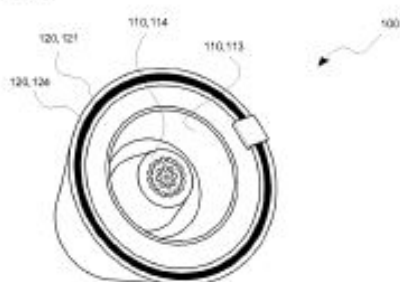
Inventor: YOON JAESUN

The present invention relates to an LED lighting system for a biophoton, comprising: an illuminator comprising an LED illumination part for irradiating LED light, a heating part formed to encompass the illumination part and being heated in the forward direction, and an ion generator formed inside the illumination part and simultaneously generating cations and anions so as to clean the surrounding air; and a control unit for controlling, by considering average temperature by location, via wireless communication, the heating temperature of the heating part, and light quality and luminosity with respect to the illumination of the illumination part. Therefore, the present invention promotes the healthy growth of a growth product by being constructed as a package, which has illumination, heating and air cleaning functions integrated as one, in the fields of growable plants and poultry shed farms, and can simultaneously reduce investments for equipment costs and reduce the energy for equipment operation.

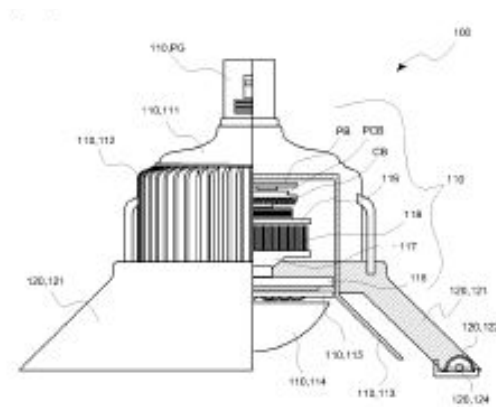
[5:1]



[5:2]



[5:3]



DE19541735

Use of hydrothermal rock deposits e.g. calcite precursors

Inventor(s): ROLLER IRIS

Use of hydrothermal rock deposits is claimed, to improve the light quantum resonance effect in the body by molecular disperse division. The rock deposits are present in healing, thermal, brine, mud, sulphur and mineral deposits, completely returned to molecular dispersion, completely homogenised with noble crystals, plant and animal materials as colloidal compounds, for better control of biophoton radiation through nanocrystals, between natural inorganic and natural organic materials. The rock deposits provide precursors of calcite, aragonite, dolomite, marble, zinc blende, smithsonite, wurzite, manganite, hausmannite, neptunite, hornblende, calaverite, stephanite, hessite, krennerite, chalcocite, bornite, linnaeite, magnetic pyrites, carrollite, ilmenite, ullmannite, marcasite, klnozoisite, pyrophyllite, nacrite, aukerite, rhodochrosite, kutnahorite, epistilbite, heulandite, fluorspar, basnaesite, creedite, synchisite, tunisite, chabazite, graphite, coal, apophyllite, sellaite, karpfolite, brookite, potassium feldspar, plagioclase, aegirine, vesuvian, elbaite, dravite, schorl, buergerite, tsilaisite, uvite, liddicoatite, siderite, hot springs deposit, hydrocarbonate, calcium carbonate, sulphate, free carbonic acid, dissolved oxygen, metasilicic acid, metaboric acid, titanilic acid, succinic acid, benzoic acid, sulphur, brine, traces of iron, chromium, titanium, aluminium, gold, silver, platinum, selenium, molybdenum, ammonium, calcium, lithium, sodium, chlorite, iodide, fluorine, bromine, thermal salts, potassium, magnesium, cobalt, zinc, meerschaum (sepiolite), tartar and similar or different inorganic materials. Also claimed are compositions with volatile, liquid, viscous, waxy, pulverised or solid, skin-tolerated, natural or allergologically (sic) tolerable carriers.

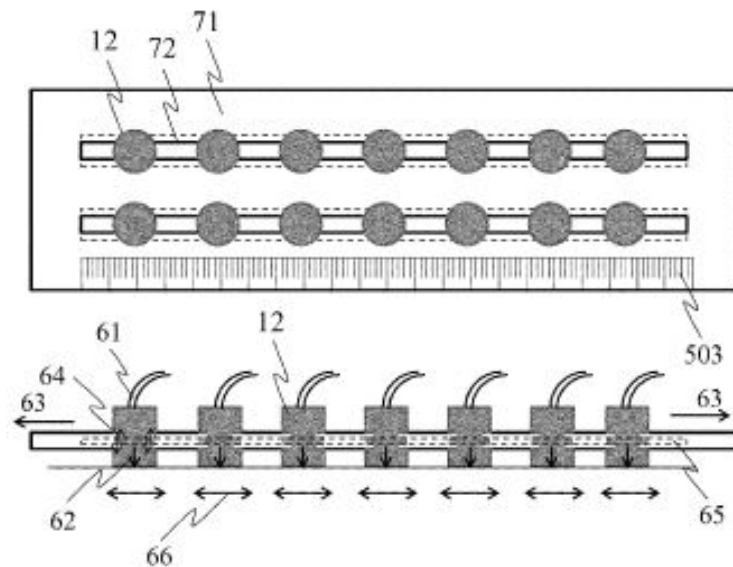
WO2016110969

BIOPHOTON MEASUREMENT DEVICE

Inventor: FUNANE TSUKASA

The present invention is a biophoton measurement device having the following: one or a plurality of light irradiation means disposed atop a test subject surface; one or a plurality of light detection means disposed atop the test subject surface; a retaining part for retaining the light irradiation means and the light detection means; a mounting tool for mounting the retaining part on the test subject; and a means for altering an SD distance defined by the

distance between a light irradiation means and a light detection means. The retaining part is configured so as to be able to retain the light irradiation means and light detection means so that there are at least two kinds of SD distances.

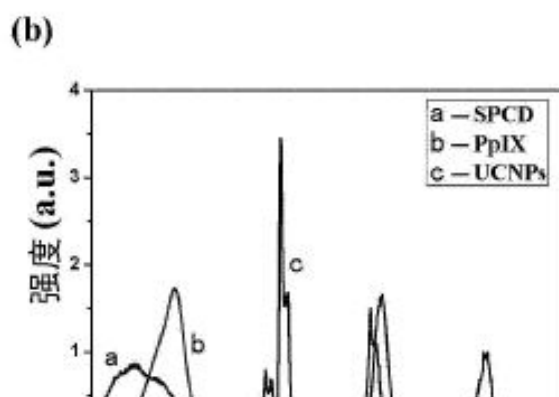
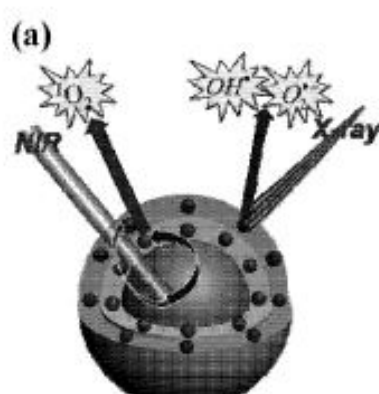


CN104383539

Cell nucleus targeted biophoton diagnosis and treatment agent and preparation method thereof

Inventor: FAN WENPEI

The invention relates to a cell nucleus targeted biophoton diagnosis and treatment agent and a preparation method thereof. The cell nucleus targeted biophoton diagnosis and treatment agent comprises gadolinium doped upconversion fluorescence nano particles, first photosensitizer doped first solid silicon oxide layers coating the gadolinium doped upconversion fluorescence nano particles, second photosensitizer doped second solid silicon oxide layers coating the first solid silicon oxide layers and cell nucleus targeting ligands covalently grafted on the outer surfaces of the second solid silicon oxide layers, wherein at least one of the first photosensitizer and the second photosensitizer is capable of absorbing visible light emitted by the gadolinium doped upconversion fluorescence nano particles under irradiation of near-infrared lights to produce singlet oxygen, and/or at least one of the first photosensitizer and the second photosensitizer is capable of catalyzing water decomposition under the condition of X ray radiation to produce active oxygen radicals.



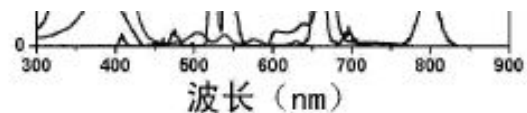


图 3

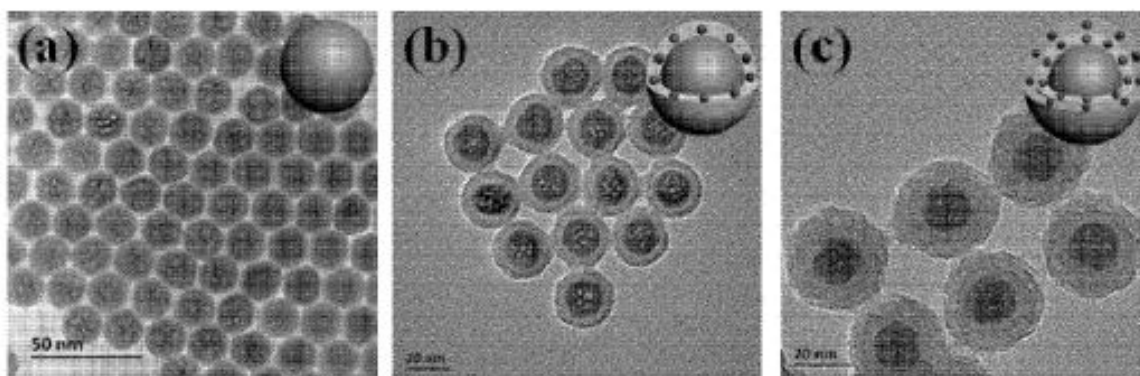


图 4

US2015053626

WATER FILTRATION AND TREATMENT SYSTEMS AND METHODS

Inventor: CAULKINS GLEN

Implementations of the present invention relate to systems, methods, and apparatus for filtering and treating water, such as tap water, well water, spring water, etc., and producing drinking, bathing, and swimming water. More specifically, such systems, methods, and apparatus can produce purified water by removing substantially all suspended as well as dissolved solids, undesirable acids, gasses and all and any contaminants from the water. Additionally, the systems, methods, and apparatus can produce reprogrammed high biophoton mineralized drinking water by chilling vortexing over proprietary lodestones, ingenious, sedimentary and metamorphic rocks and creating bicarbonate ions in the water introducing minerals and/or salts into the water.

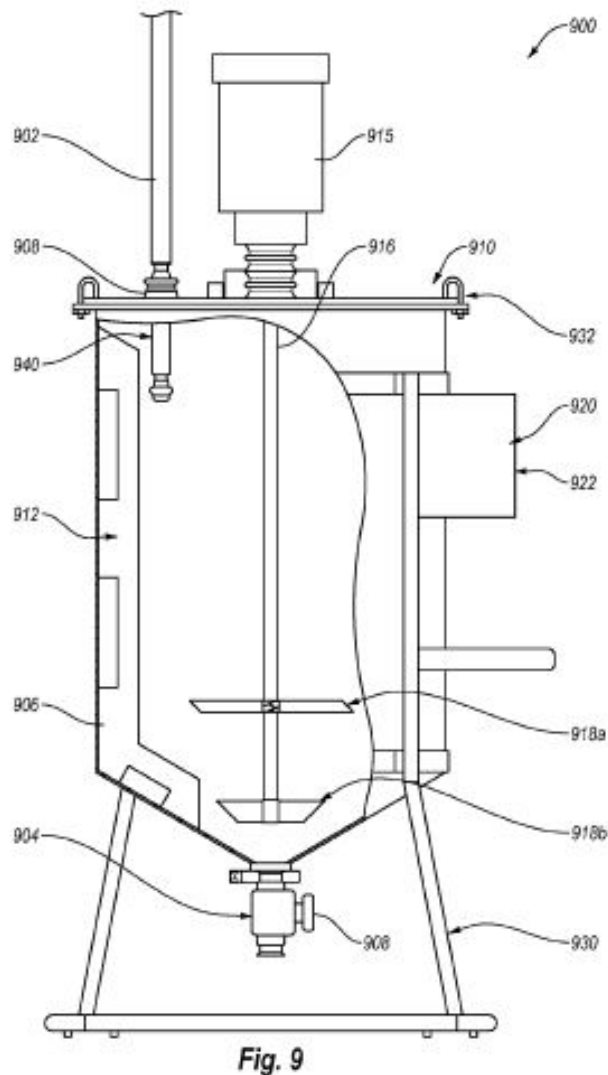
WO2014093049

WATER STABILIZATION, REVITALIZATION, FILTRATION AND TREATMENT SYSTEMS AND METHODS

Inventor: CAULKINS GLEN

Implementations of the present invention relate to systems, methods, and apparatus for filtering and treating water, such as tap water, well water, spring water, etc., and producing drinking, bathing, and swimming water. More specifically, such systems, methods, and apparatus can produce purified water by removing substantially all suspended as well as dissolved solids, undesirable acids, gasses and all and any contaminants from the water. Additionally, the systems, methods, and apparatus can produce reprogrammed high biophoton mineralized drinking water by chilling vortexing over proprietary lodestones, ingenious,

sedimentary and metamorphic rocks and creating bicarbonate ions in the water introducing minerals and/or salts into the water.

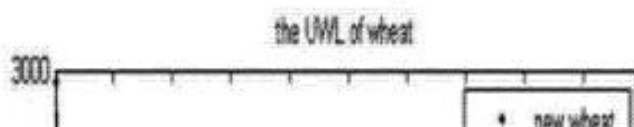


CN103034620

Frequency-domain characteristic analyzing method of excited BPE (Biophoton Emission) signal of wheat grain

Inventor: WANG FENG / SHI WEIYA

The invention relates to a frequency-domain characteristic analyzing method of an excited BPE (Biophoton Emission) signal of wheat grains. The method comprises the steps of: first, carrying out one-dimensional stable wavelet denoising pretreatment for an excited BPE signal of wheat grains obtained; and then, analyzing the frequency-domain characteristics by a Fourier analytic method so as to extract the excited BPE information of the wheat grains accurately and completely. The effect of the method is verified by the embodiment. The result shows that the method reflects the frequency-domain characteristics of the excited BPE signal of the wheat grains well.



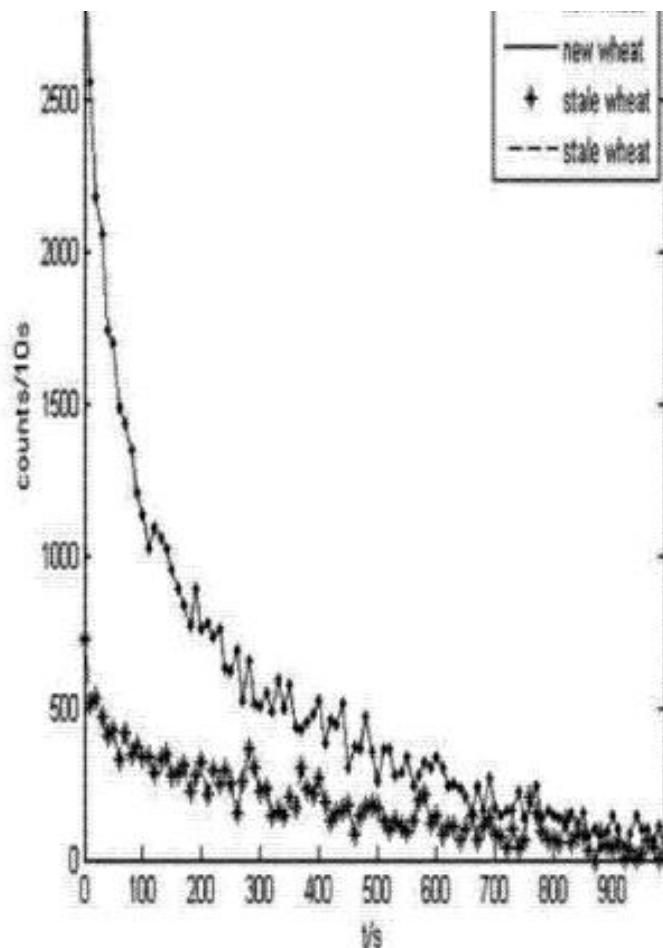


图 1

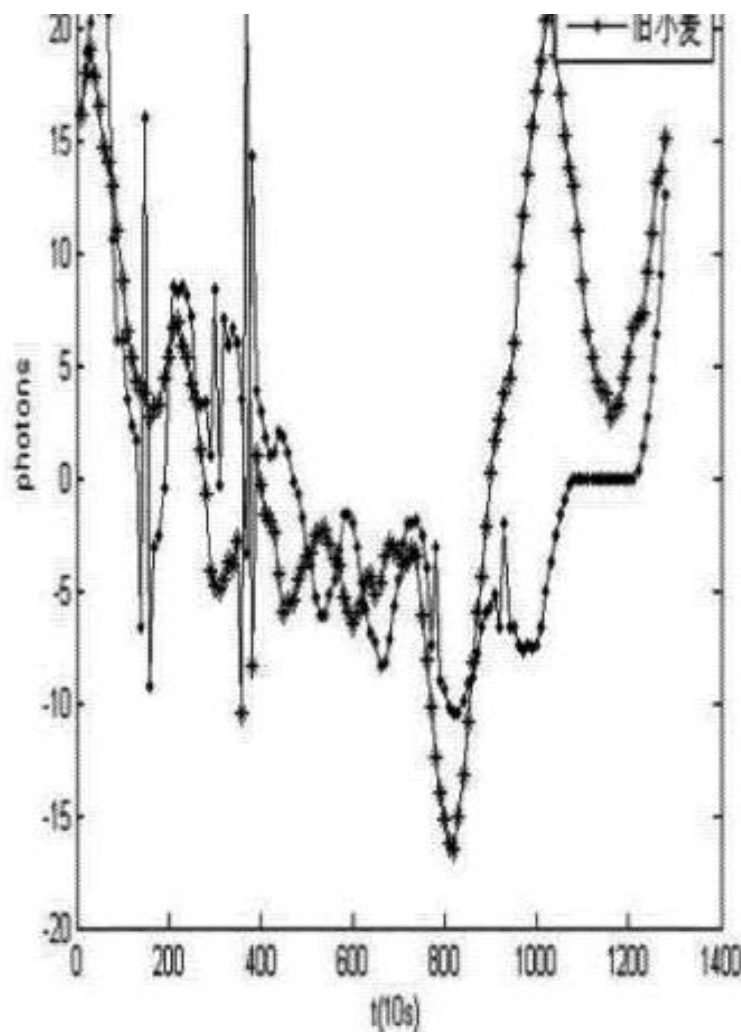
CN102967368

Power spectrum analysis method for spontaneous BPE (biophoton emission) information of wheat grains

Inventor: LIANG YITAO

The invention discloses a characteristic analysis method for spontaneous BPE (biophoton emission) information of wheat grains. The characteristic analysis method comprises the following steps of: preprocessing spontaneous BPE time-domain data, the amplitude of which changes along with time, of the wheat grains to eliminate singular values of the data; then computing an autocorrelation function of the spontaneous BPE data of the wheat grains; and finally, acquiring a power spectrum distribution function of the spontaneous BPE information of the wheat grains by virtue of a correlation function method, and computing three characteristic parameters including spectrum edge frequency (SEF), spectrum gravity frequency (SGF) and power spectrum entropy (PSE) to describe the characteristics of a power spectrum of the wheat grains. The characteristic analysis method is simple in thinking, ensures clearness and definiteness of the characteristics, and can reveal frequency domain information implied in the existing time domain data and improve descriptive power to the spontaneous BPE information of the wheat grains.





RU2436497

METHOD OF DETERMINING INDICATIONS FOR CARRYING OUT RADIO- AND CHEMOTHERAPY

Inventor: SIMONOVA OLGA et al.

FIELD: medicine. ^ SUBSTANCE: iFvention relates to medicine, radiobiology and can be applied in treatment of malignant tumours. Risk of development of radio- and chemotherapy complications is predicted by determination in patient's spectrum of antioxidants of - carotenoids concentration by means of biophoton scanner directing light ray at palm projection of Ho-Ku point. Index of skin carotinoids (ISC) is determined and if ISC value is less than 12000, conclusion about possible development of complications during radio- and chemotherapy is made. ^ EFFECT: method ensures acceleration and simplification of determination of indications for carrying out radio- and polychemotherapy, high accuracy of predicting risk of complications in case if such treatment is carried out.

CN201861626

Device quantitatively measuring traditional Chinese medicine science 'syndrome' through biophoton radiation of human body

Inventor: JINXIANG HAN

The utility model discloses a device quantitatively measuring traditional Chinese medicine science 'syndrome' through the biophoton radiation of human body, which comprises a darkroom, a detector, a preamplifier and a processor. The detector is arranged in the darkroom, the preamplifier is connected with the detector through a circuit, the processor is connected with the preamplifier through a circuit, the detector is used for measuring biophotons from acupuncture points, the preamplifier is used for converting and amplifying biophoton signals received by the detector, and the processor records the intensity value of the biophotons from the acupuncture points and processes the measured value. A method of quantitatively measuring the traditional Chinese medicine science 'syndrome' through the biophoton radiation of the human body: a person enters the darkroom, the detector is moved to be close to the acupuncture point to be detected, a shutter on the detector is opened, biophotons from the acupuncture points to be detected are measured, the strength value of the biophotons from the acupuncture points to be detected is recorded through the processor and the measured value is processed by the processor. The device is quick, sensitive and reliable and has no damage on the human body.

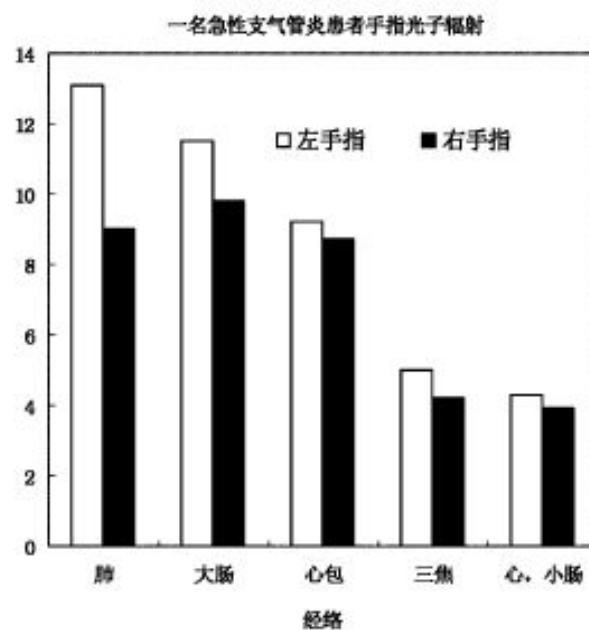
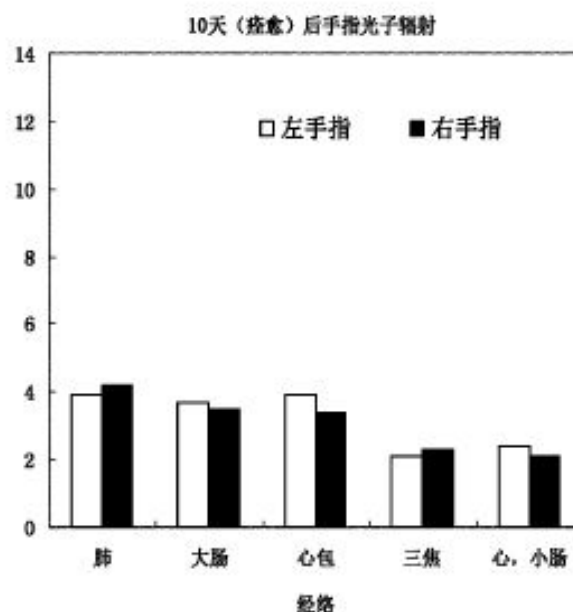


图 3(a)



CN102004089

Device and method for detecting property of traditional Chinese medicine

Inventor: JINXIANG HAN

The invention discloses device and method for detecting the property of the traditional Chinese medicine. The device comprises an excitation light source, a sample chamber, a biophoton measuring system and a data processing system, wherein the excitation light source is used for generating excitation light; the light emitted by the exciting light source can be incident into the sample chamber; the biophoton measuring system is used for measuring the intensity of the biophoton emitted by the sample after being excited in the sample chamber; and the data processing system is used for analyzing and processing data measured by the biophoton measuring system which is connected with the data processing system by a circuit. The invention also discloses the method for detecting the property of the traditional Chinese medicine, comprising the following steps of: placing the powdery sample into the sample chamber; exciting the light source to emit the excitation light for irradiating the sample; detecting the intensity of the biophoton emitted by the sample after being excited by using the biophoton measuring system; and transmitting the information data into the data processing system for analyzing, thereby judging the properties of cold, heat and moderate and the degrees of the traditional Chinese medicine of the sample.

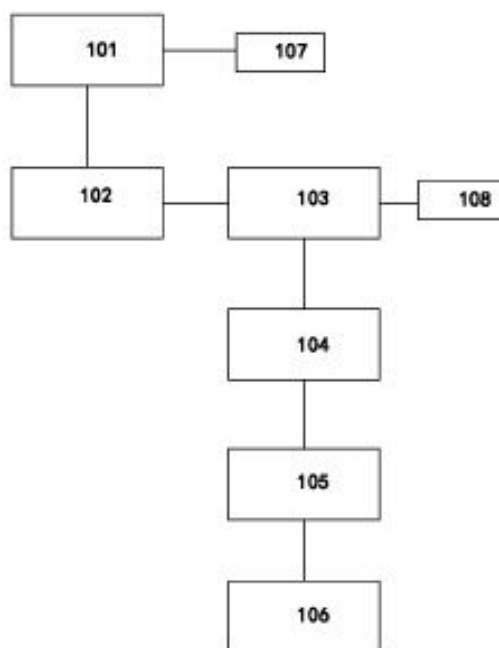


图 1

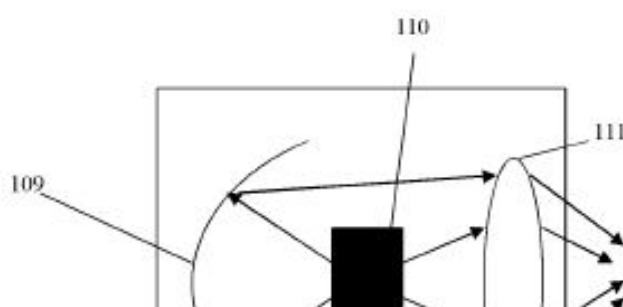




图 2

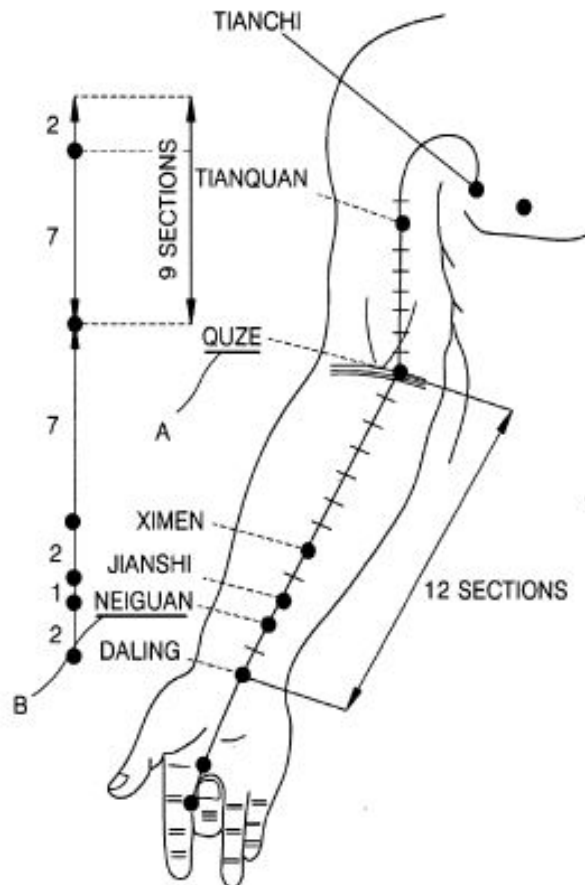
US2005154317

Apparatus and method for detecting an acupoint or other site of interest

Inventor: SHIN SANG-HOON

In an apparatus for detecting an acupoint using an intensity of biophotons emitted from a living system in response to magnetic field stimuli, and a method for detecting an acupoint, the apparatus includes a magnetic field application unit for applying a magnetic field to a predetermined site of the living system, a biophoton measurement unit for measuring the intensity of the biophotons emitted from the predetermined site of the living system, and an acupoint determination unit for determining whether the predetermined site is an acupoint based on the intensity of the biophotons measured by the biophoton measurement unit.

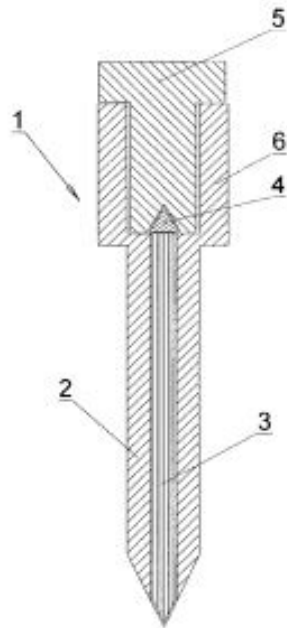
FIG. 3



US2002173831
Acupuncture needle

Inventor: COSTA DOS SANTOS PAULO DE TARS

Acupuncture needle having a grasping and a puncturing end comprising a hollow needle body and a coaxially located light conducting element therein, a reception and emission surface for biophoton radiation at the distal puncturing end of the needle and a prism with a 180 DEG reflection and in light conducting contact with the light conducting element at the proximal grasping end of the needle.

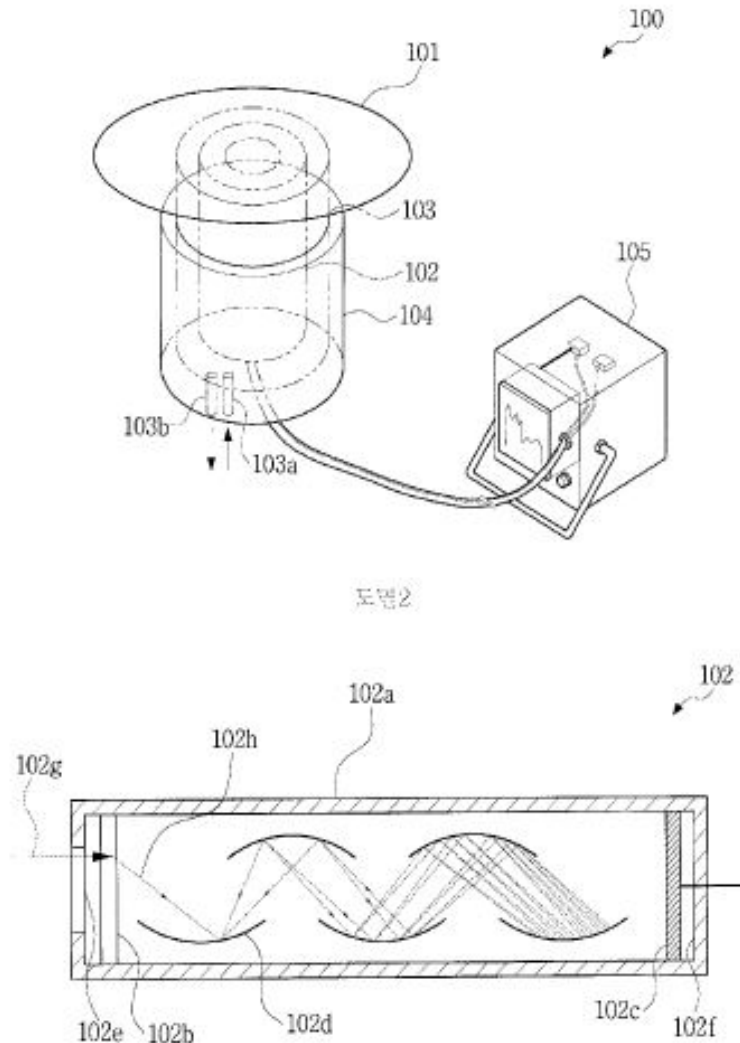


KR100637032
HEALTH ASSESSMENT DEVICE USING BIOPHOTON

Inventor: SOH KWANG

The present invention relates to a health diagnostic apparatus, and more particularly, to a health diagnostic apparatus using a living body photon that diagnoses a health state of an object to be inspected by detecting and analyzing a living body photon of a living body emitted from an object to be inspected. The organism spontaneously emits visible light in the visible light region without external stimulation, and biophotons of the emitted light are closely related to the metabolism of the organism. This study of biophotons began in the early 1920s when Russian scientist A. Gurwitsch discussed the question of how biological tissues transmit and transform information about the size and shape of different organs. It is also argued that the release is due to biochemical reactions within the tissue associated with the oxidative metabolic process of the organism, or is due to the production of reactive oxygen species and the activity of enzymes. Thus, the linkage between biomolecules and the metabolism of an organism has not been elucidated yet, but biomedical emission from an organism is closely related to the physiological or pathological state of the organism, And

health professionals in the field of life sciences. Generally, a photomultiplier, which is a photodetector, is used for the measurement of a biophoton, which is a device used for detecting light in the vicinity of a visible light. When a photoelectron, which is a light, is collided with a metal surface, Is an electron tube that amplifies minute photoelectrons by utilizing the phenomenon that not only is reflected but also energy is given to electrons in a solid and new electrons are ejected from the metal surface, that is, secondary electron emission phenomenon occurs. Hereinafter, a structure and a method for a health diagnosis using a bio-photon according to a conventional technique for diagnosing a health state of a hand, which is a target site to be inspected, of a person to be inspected will be described below with reference to the accompanying drawings. 1 is a block diagram schematically showing a conventional bio-photon-based health diagnostic apparatus.

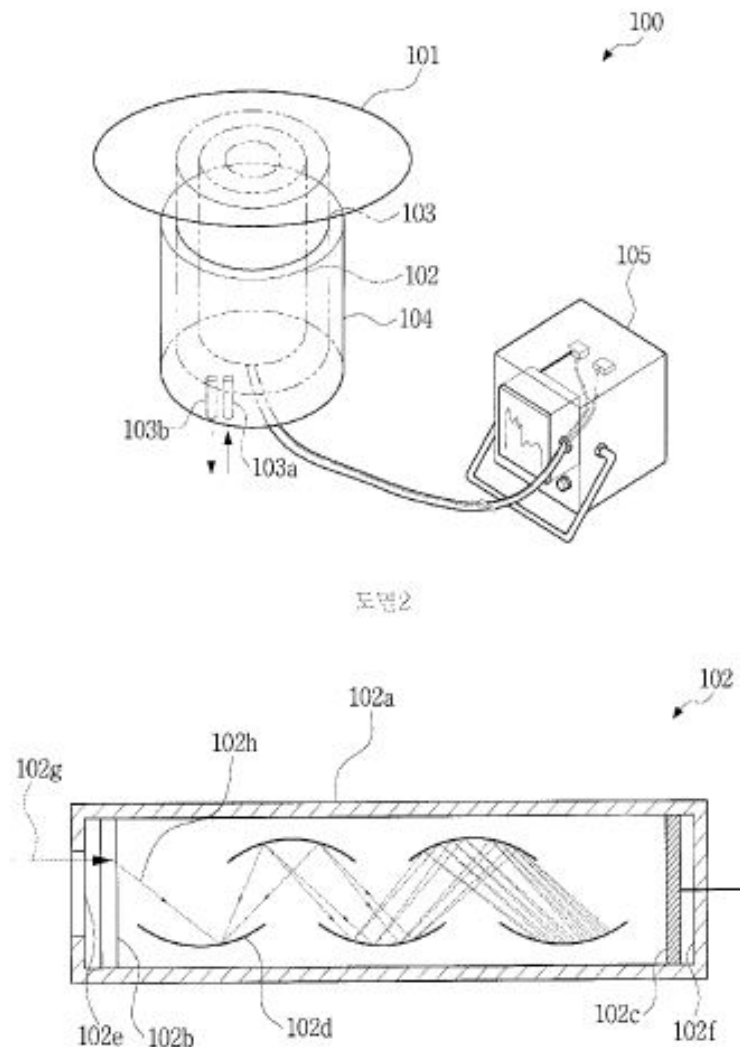


KR20060092371 / KR100637031
HEALTH ASSESSMENT DEVICE USING BIOPHOTON

Inventor: SOH KWANG

The present invention relates to a bio-photon-based health diagnostic apparatus, and more particularly, to a bio-photon-based health check-up apparatus for diagnosing the health state of an object to be inspected by detecting and analyzing the number of bio- The organism

spontaneously emits visible light in the visible light region without external stimulation, and biophotons of the emitted light are closely related to the metabolism of the organism. This study of biophotons began in the early 1920s when Russian scientist A. Gurwitsch discussed the question of how biological tissues transmit and transform information about the size and shape of different organs. It is also argued that the release is due to biochemical reactions within the tissue associated with the oxidative metabolic process of the organism, or is due to the production of reactive oxygen species and the activity of enzymes. Thus, the linkage between biomolecules and the metabolism of an organism has not been elucidated yet, but biomedical emission from an organism is closely related to the physiological or pathological state of the organism, And health professionals in the field of life sciences. Generally, a photomultiplier, which is a photodetector, is used for measuring biomagnetism, which is a device used for detecting light in the vicinity of a visible light. When a photoelectron, which is a light, is collided with a solid surface, In addition, it is an electron tube that amplifies a minute optoelectronic current by taking advantage of the fact that energy is given to electrons in a solid and new electrons are ejected from the solid surface, that is, secondary electron emission phenomenon occurs.



KR20050013375 / KR100527280

**APPARATUS AND METHOD FOR COUNTING BIOPHOTONS, CAPABLE OF
DIAGNOSING HEALTH CONDITION OF OBJECT PERSON BY USING ANALYSIS**

ON BIOPHOTONS EMITTED FROM HANDS OF OBJECT PERSON

Inventor: JUNG HYUN HEE

PURPOSE: An apparatus and a method are provided to count biophotons emitted from hands of an object person for measurement and diagnose the health condition of the object person in accordance with an analysis on the biophotons. **CONSTITUTION:** An apparatus comprises a dark chamber(15), two optical detectors, two signal converting units, and a counting system. The dark chamber is divided into two sections, and has holes formed at a front surface of each of the sections. Each of the holes has a size allowing for passage of a hand of an object person for measurement. The optical detectors are arranged in each section of the dark chamber such that the optical detectors detect biophotons emitted from the object person for measurement. The signal converting units amplify the current signals output from the optical detectors, and convert the signals into countable square pulses.; The counting system counts square pulses which are converted by the signal converting units, in accordance with a tuned time interval. be utilized for medical diagnosis purpose

KR20040108467

DEVICE AND METHOD FOR DETECTING DELAYED LUMINESCENCE FOR EFFICIENTLY MEASURING DELAYED LUMINESCENCE BY USING LIGHT DETECTOR

Inventor: CHOI JUN HO

PURPOSE: A device and a method for detecting delayed luminescence are provided to efficiently measure the delayed luminescence by using a light detector. **CONSTITUTION:** A device for detecting delayed luminescence includes a light detector, light shielding box(11), a shutter(13), a light source(15), and a data processing unit(20). The light detector detects biophoton emitted from a test sample. The light shielding box(11) shields the light detector from external light. The shutter(13) is positioned between the test sample and the light detector and adjusts light such that the biophoton emitted from the test sample reaches the light detector or not. The shutter light source(15) is attached to the bottom surface of the shutter(13). The light source(13) turns on light when the shutter(13) is opened and turns off light when the shutter(13) is closed.

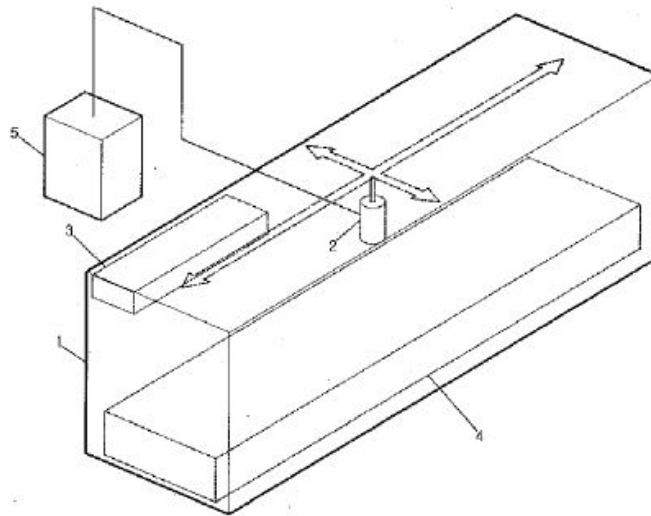
KR20040053682 / KR100836491

METHOD FOR PRODUCING OR TESTING SKIN CARE COSMETICS BY BIOPHOTON MEASUREMENT AND SKIN CARE COSMETICS PRODUCED OR TESTED THEREBY

Inventor: HYUN GWANG SU

PURPOSE: Provided are a method for producing or testing skin care cosmetics by biophoton measurement and skin care cosmetics produced or tested thereby. Therefore, biological active components are screened, and skin care cosmetics containing them are produced. **CONSTITUTION:** A method for producing or testing skin care cosmetics by biophoton

measurement comprises the steps of: measuring biophoton by biological active components of the functional cosmetics; determining the usage of the biological active components; and manufacturing skin care cosmetics containing then when it is determined to be useful.

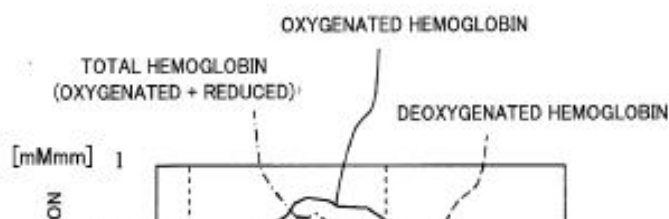


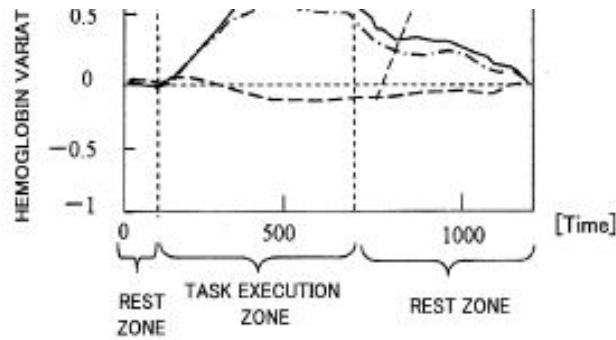
US2009054885
BIOPHOTON MEASURING INSTRUMENT

Inventor: KAWASAKI SHINGO

Biophoton measuring instrument comprises a light illuminating section for illuminating a sample with a light having a predetermined wavelength and reactive with oxidized hemoglobins and reduced hemoglobins through an illuminating optical fiber, a light detecting section for detecting and amplifying the light passing through a detecting optical fiber and the sample, a signal processing section adapted for computing the hemoglobin temporal variation information on the oxidized hemoglobins, the reduced hemoglobins and the whole hemoglobins in the sample from the signal detected by the light detecting section and having noise detecting means for arithmetically processing the detected signal and judging/detecting whether the temporal variation information is the noise (low S/N noise); attributed to the presence of an obstacle to the pass of the light between the sample and the end face of the optical fiber or the noise (mirror noise) attributed to the damage to the light illuminating section, and a display section for displaying the noise signal judged/detected by the signal processing section to enable identification of the type of the noise.

FIG.3



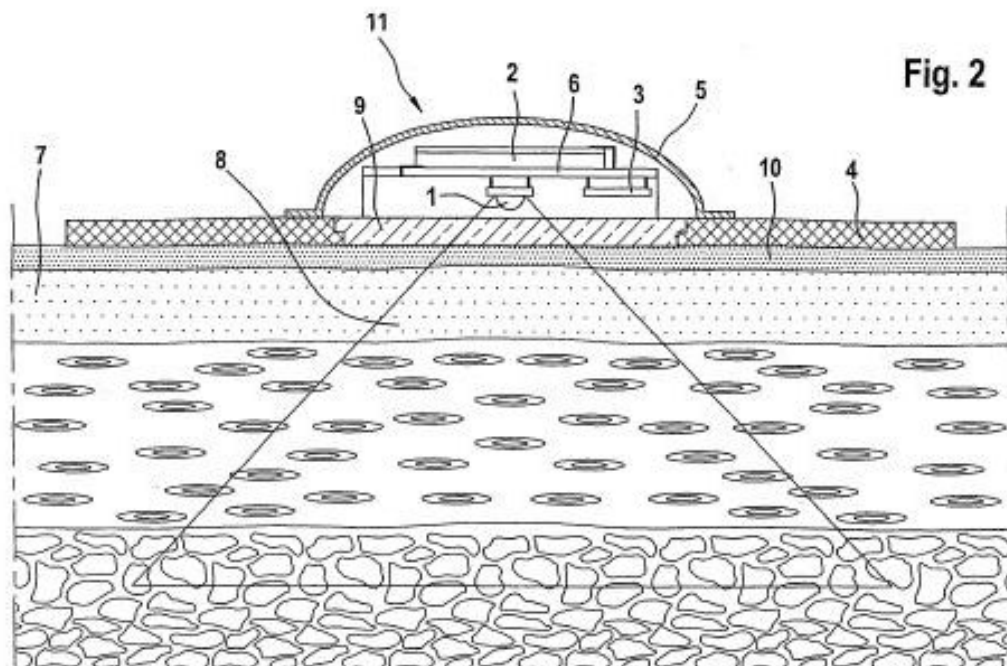


WO02100484

SKIN ADHESIVE DRESSING COMPRISING A LIGHT-EMITTING OR RADIATION-EMITTING DEVICE, AND METHOD FOR THE USE THEREOF

Inventor: LENKE MICHAEL

The invention firstly relates to a skin adhesive dressing (4) comprising at least one adhesive surface that adheres to the skin and optionally comprising a sterile nonwoven fabric that at least partially covers a wound. The novel skin adhesive dressing (4) has a through opening (10), which leaves the wound, in essence, accessible and which is provided with a covering (9). This covering is transparent to light or is transparent to radiation and is placed on the side of the skin adhesive dressing (4) facing away from the wound. The invention also relates to a light-emitting or radiation-emitting device (11), particularly for a skin adhesive dressing (4) of the aforementioned type. This device comprises a light source or radiation source (1), a power source (2), and an electric circuit that connects the light source or radiation source (1) to the power source (2), all of which being at least partially covered by or contained in a housing (5). The light source or radiation source (1) is preferably configured as a biophoton source, and the power source (2) is preferably configured as a direct-current source. The invention also relates to a method for enhancing human well-being while using the inventive skin adhesive dressing (4) as well as the inventive light-emitting or radiation-emitting device (11).



DE202006007899

Biophoton resonance method for medical therapy of organ systems, involves penetrating biological body in electromagnetic waves, so that its physiological, biochemical and biophysical functions are enhanced

Inventor: LEHMANN KARL HEINZ

The method involves generating longitudinal electromagnetic waves through vibratory resonators (2), which consist of current-carrying electrical conductors (1) and can be shifted by sound waves comprising infrasonic and ultrasonic waves into mechanical resonance vibrations. The electromagnetic waves appear in resonance to biophotons, bioelectrical frequencies and biological vibrations. A biological body penetrates in the electromagnetic waves, so that its physiological, biochemical and biophysical functions are enhanced.

Fig. 1

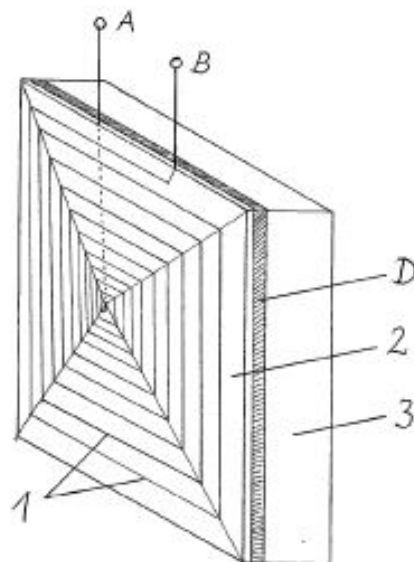


Fig. 1a

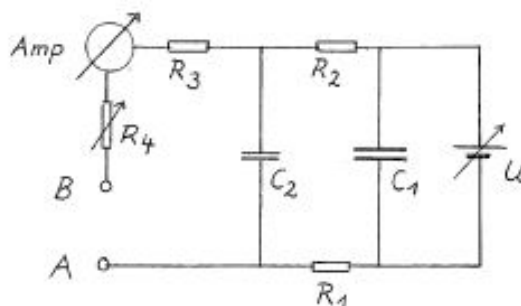
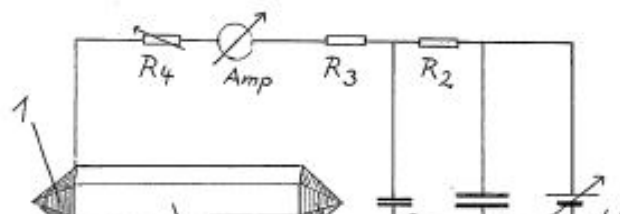
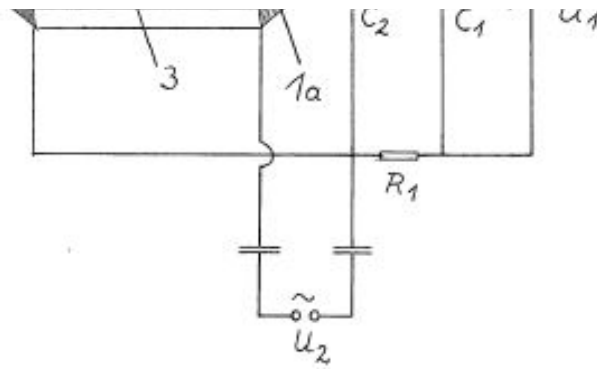


Fig. 2



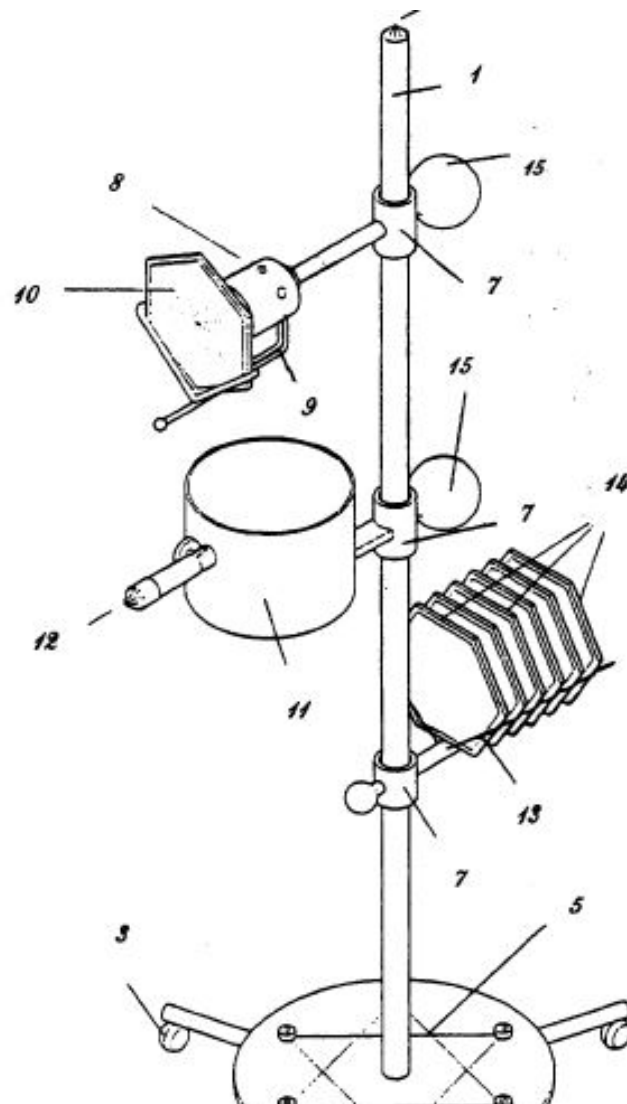


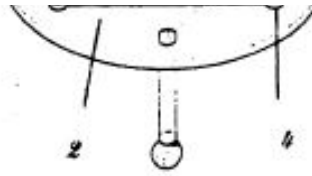
ATA75796 / AT403009

Combination crystal/coloured light therapy apparatus with biophoton energy

Inventor: REDEN INGEBORG

The apparatus for coloured light therapy consists of a stand to which a halogen light source is fixed by means of a holder. In a further holder, coloured glass discs can be inserted in front of the light source. In front of the lamp, a ground crystal is inserted to optimize the light diffraction. A pot additionally fixed to the stand is used to contain precious stones, flower essences or homeopathic solutions.





Fritz-Albert POPP Biophoton Patents

US7692788

Method for quickly determining qualities/qualitative changes in any system

The invention relates to a method for testing the slightest quality differences or quality features of any objects and agents interacting therewith based on measuring the percentage scatter of "ultraweak" photon emissions ("biophotons" in biological systems) and the delayed luminescence in a scatter chamber (darkroom). These scatter percentages can vary to such an extent as to enable the sufficiently sensitive registration of slightest quality differences (quality features).

ZA9208094

Method and means of determining the health conditions of a living creature.

The invention relates to a method and device for determining the state of health of a living being. The invention provides for a selected, physiological parameter of the living being, e.g. the conductivity of the skin, to be recorded on a statistically significant multiplicity of measuring points distributed over a defined part of the body of the living being, for the frequency distribution of the recorded measurements to be determined and compared with a reference frequency distribution of the selected, physiological parameter. The reference frequency distribution is a logarithmic distribution which can be determined directly from the measurements obtained from the particular test subject by statistical methods. The invention permits reliable statements to be made regarding the overall state of health of the test subject.

US2006270055

Method for testing external influences on biological tissues

The invention relates to a method for testing external influences on biological systems by measuring "ultraweak photon emissions (biophotons) and "delayed luminescence", based on non-local and different changes of photon emissions on different points of the tissue through exposure to the external influence. The changes can vary to such an extent that the slightest differences in the influences can be registered with the highest sensitivity.

US4458531

Method of and apparatus for examining biological effects in cell-lots

In a method of testing the biological effects of cell-lots, which release a characteristic or stimulatable ultra-weak photon radiation, the intensity and/or the photon statistic of the ultra-weak photon radiation is measured, as the test factor, for the purpose of the in vitro examination of substances for possible cell-damaging or regenerating effects, or for the purpose of carrying out quality control on biological substances, such as foodstuffs, edible plants or seed materials.

EP0430150

Method for testing quality and quality changes of biological systems and organochemical compositions interacting with these systems using measurements of ultraweak photon emission.

Known status parameters for the quality of biological systems, foodstuffs and organic chemical compounds interacting with the latter are with the methods of comparative statistical analysis with measured parameters of ultraweak photon emission. This makes it possible to reflect reproducibly the quality content and the vitality of a biological system in the sense of Erwin Schrödinger's quality term by means of measured parameters, to measure the quality of foodstuffs and to determine in advance expected changes in quality on storage, and to predict the biocompatibility of organic chemical compounds. Foodstuffs irradiated for preservation purposes can still be distinguished significantly from non-irradiated even one year after the irradiation by the intensity of the photon emission. Environmental effects on live systems can be characterised almost directly as environmental stress or damage by observing the ultraweak photon emission over a short time.

EP1776042

DEVICE FOR THE DETERMINATION OF FUNCTIONAL VALUES

The invention relates to a device for the determination of functional values of biological systems, whereby in particular, the conductivity of the skin is recorded as a functional value. The measured values for the conductivity are determined using an electrode matrix (1) in a measuring device (11), whereby a current circuit to a reference electrode (13) is formed and the measured values are subsequently stored and analysed.

EP1340066

METHOD FOR DETECTING BACTERIAL INFECTION

The invention relates to a method for detecting bacterial infection or contamination of or in products in order to be able to rapidly determine the product's quality or sterility. To this end, the intensity of photon emission of a nutrient medium is determined and measured with a sample of the object to be examined.

EP1188041
**METHOD, SYSTEM AND USE OF MEASURING DEVICES FOR DETERMINING
THE GERMINABILITY OF SEEDS**

A process (I) and apparatus for determining the germination characteristics of seed corn by bio-photon and water moisture detection, are new. In a process (I) to determine the germination capacity of seed grain especially cereals, the seed grain is first exposed to light pulses for a defined period and the exposure then terminated. A measurement is made of at least one characteristic of the light then emitted by the seed without further light stimulation especially the residual luminescence or spontaneous light emission. The light emitted gives an indication of the germination capacity of the seed. In addition a further measurement is made especially of the seed grain water content, and is used as a correction factor to the germination characteristic based on the light value. An Independent claim is also included for apparatus for use in (I).

EP1126271
**Method and device for determining the malignancy of tumor tissue and for choosing
substances beneficial to the tissue**

Method involves measurement of the bio-photon emission from tumor tissue using a very sensitive light detector. The tissue can first be excited using illumination with suitable wavelength light, using ultrasound, etc and then the value of emitted light measured. From the measurements a suitable medicine can be selected to treat the tumor. An Independent claim is made for a system for treating malignant cancers by determining the degree of malignancy from light measurements and then determining the optimum medicine.

DE102005058332
**Method for optimal interpretation of data evaluating regulatory capacity of biological
system, in particular human being, comprises use of factor analysis and comparison
with reference data**

One of the physiological parameters of a biological system in particular of a human being, which can be the galvanic skin response, is measured at a large number of subjects. The data are evaluated by using various appropriate statistical methods. The log-normal distribution and the Gaussian distribution are calculated. The resulting matrix is used as a base for a factor analysis already containing the data of a reference group. The position of the factors can be used as a criterion for the evaluation of the condition of an individual regarding the regulatory capacity of his/her system.

DE102004055200
Functional value e.g. regulating capability, determining method for e.g. human being,

involves evaluating light signal after deviation from pure random distribution and correlation to ideally regulating distribution

The method involves evaluating a light signal after a deviation from a pure random distribution and a correlation to an ideally regulating distribution. A streaming portion of a photon is measured, where the photon is used for stimulation of a biological system. The light signal is utilized as a trigger pulse for treatment of a relevant skin area of the biological system.

DE10147701

Testing for the smallest possible quality differences between biological tissue by measurement of bio-photon emission and application of photon count statistics

Method for testing for the smallest possible quality differences between biological tissue by measurement of bio-photon emission and delayed luminescence. Measurement of photon emission is with or without the effect of interacting agents. Differences in measurements are determined using photon count statistics.

DE10132549

Determining heat regulating capacity of biological systems involves irradiating with infrared light, detecting relaxation of photon intensity and compensating using hyperbolic function

The process involves determining the quality and/or quality changes of biological systems by measuring the ultra-weak photon emission of a system subjected to the light after ending the radiation. The biological system is irradiated with infrared light and the relaxation of the photon intensity is detected against time and then the relaxation function of the investigated system is compensated using a hyperbolic function.

DE4439451

Examining changes in the condition of biological tissue

In a method for examining changes in the condition of human, animal or plant tissue by measurement of ultra-weak photo emission, the new feature is that the measuring parameters of the emission are employed.

DE4401169

Faster procedure for detecting differences in fluid characteristics

A method for discriminating between the characteristics of similar fluids employs differences in the respective photon emissions of fluid samples after their identical excitation at a controlled temperature. Each sample (1) is successively enclosed in a transparent quartz

vessel having a pair of titanium electrodes (2,3) supplied with a DC potential of typically 18 volts. An excitation system (4) activates the sample either by energising a tungsten light source of controlled spectrum or by EM/sound waves of constant intensity and wavelength. After a definite period of excitation the luminescence of the sample is measured by the detector(s).

DE4308520

Method for differentiating between homozygotes, heterozygotes and normal cells of an organism

A method is specified for differentiating between homozygotes, heterozygotes and normal cells of an organism. It is characterised in that the cells to be investigated are irradiated with UV light and/or treated with a substance which partly damages the cells and the intensity of the photon emission of these cells is subsequently measured. The method is preferably used before X-ray diagnosis in which the risk of inducing a disease triggered by the radiation is to be no greater than the probability of early diagnosis of a disease.

DE3040855

Examining biological effects on foodstuffs of seeds - by measuring intensity of ultra-weak photon radiation in vitro

A measurement of the spontaneous or stimulated emission of ultra-weak photon radiation is used as an in vitro parameter of a cell lot. The parameter is used to detect possible cell-damaging or regenerating effects or to act as a quality control. The measured quantity is either the photon intensity or a photon statistic e.g. the distribution of numbers of photons emitted in a measuring interval. The ultra-weak radiation is typically in the infra red band and has an energy very much less than that of thermal radiation. Typically the radiation is 10 power (-10) less than thermal radiation. The radiation is detected by a photo multiplier with a gain of over 10 power 6. The method may be used to determine whether a cell lot is in a healthy state. Alternatively it can be used to determine the effect of an agent on the cells. The method is partic. suitable for quality control in foodstuffs.

DE3038255

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DE2844217

Diagnosis of tumours and direction of treatment - by measuring ultra-weak photon emission characteristics of sample tissue

The method of diagnosing malignity of sample tissue and direction of the therapy selected for malignant tumours involves measurement of ultra weak photon emissions in the spectral range from infrared to ultraviolet. The method of diagnosis is based on the fact that the radiations emitted by tumours differ in intensity and other characteristics from those emitted by normal tissues. The characteristics evaluated are to be found in the documents referenced. The beam intensity, for example, increases with increasing malignity. The method for treatment management involves treating sample tissue with different selected substances and simultaneously measuring the ultra weak photon emissions. The most suitable substance for treatment is that which changes the characteristics of the cell radiations most clearly in the direction of the corresp. characteristics of normal tissue.

DE19538768

Detection of microbial contamination, e.g. in food, drink and water

Detection of microbial contamination comprises measurement of the intensity of photons emitted by a sample in a polar solvent. A voltage is applied to electrodes placed in the sample and the measured photon emission intensity is compared with a control to determine the presence or absence of contamination.

The invention relates to a method for the detection of microbial infection.
[179]

To date, it has proved useful to detect bacteria or microbial infections in liquids (for example, beer) by colony formation of the possible germs in suitable nutrient media. The samples are applied to culture media and observed under favorable growth conditions. If, given a sufficiently large number of samples, no germination is observed after a sufficiently long incubation period of a few days, it is assumed that no germs are present. This method is now used almost everywhere where detection of microbial infections is required. A detailed description of this common method can be found in relevant textbooks, for example, by A. Koch, Growth Measurements in: American Society for Microbiology (ed. By Gerhardt, Murray, Costilow, Nester, Wool, Krieg, and Phillips) , 1981 pp. 179-206.

This customary method offers relatively high safety, but has the great disadvantage that the incubation time to the reliable detection of existing bacteria often lasts longer than a manufacturer can allow germ-free products. For technical or economic reasons, the product produced can therefore no longer be tested for germ-freeness before delivery.
[1992]

In recent years, therefore, fluorescence methods have been used which take advantage of the

fact that bacteria can be excited by fluorescence or by biochemical interventions. This allows direct detection of certain bacteria without delay. The method is fully described in the literature, for example in: Wolff, LF, Anderson, L., Sandberg, GP, Reither, L., Binsfeld, CA, Corinaldesi, G. and Shelburne, CE: Bacteria Concentration Fluorescence Immunoassay (BCFIA) for the detection of periodontopathogens in plaque. J. Periodontol. 1992,63.1093-1101.

Although the fluorescence method can detect bacteria directly without time delay, it has the disadvantage that it is suitable only for specific bacteria which can be biochemically excited to fluorescence. Moreover, even in favorable cases, the detection limit is 10 bacteria / ml. It is therefore not generally applicable, but relatively individual and costly.

A process is known from the patents (European Patent EP 0430150, Fluids DE 44 01 169 A1, Cell Cultures P 43 08 520.2-41), which reduces the photon emission to a sensitivity of 10^{-17} W (corresponding to a few quanta per second And per cm²) in the optical spectral range (from about 200-800 nm). This method can also be used to measure the recombination lights of charge carriers in liquids.

Surprisingly, it has now become apparent that this process is also suitable for displaying at least 100 bacteria / ml in polar liquids. Although the high sensitivity of the method for distinguishing the "quality" of liquids was already surprising, new studies on the detection of microbial infection provided the additional surprising finding that all microbial infections were already present at such low concentrations that they could not be detected by the other methods More detectable by significant changes in photon radiation. It has proved advantageous to bring the sample in an aqueous solution into a 10 ml quartz glass cuvette. In order to bring charge carriers into the liquid, one can advantageously enrich with 3 mM / l of cooking salt. A DC voltage of 30 volts, which is switched off again after a few seconds, is applied, for example, to two circuit boards, which are immersed in a needle-like manner parallel to the liquid at a distance of a few millimeters.

The sample is in absolute darkness. The intensity of the photon emission is measured with a light meter (which is described as a utility model, for example, in G 94 17 845.3).

It is shown that the presence of microbial infection is a sensitive change in photon emission.

The nature and state of the infection can be determined by a suitable variation of the measuring parameters (voltage, pH value, composition of the liquid, external excitation, spectral resolution), for example the question of which bacteria are involved and in which state (alive or Dead) the bacteria are present. Therefore, in addition to the first two patent claims, the claims 3 - 7. levied.

The invention is surprising and novel since the high sensitivity of the process was not known or predictable despite the known and partly patented basic building blocks. This high sensitivity combined with sufficient reproducibility makes the process interesting for many commercial areas.

The process is to be used in the beverage and brewing industry, in the monitoring of water, in the food industry, for example in dairy products, as well as in all other branches of the commercial economy which are dependent on the control of microbial infections.

Example

Into a 10 ml quartz cuvette, two needle-shaped circuit boards are inserted in parallel at a distance of 5 mm and connected to a DC voltage source. To the cuvette are added successively 8 ml of pure saline solution (3 mM / l of saline), the same solution with an additional concentration of 10 *Rhizobium japonicum* 1132-2 bacteria / ml and the same solution with a concentration of 100 *Rhizobium japonicum* 1132- 2 bacteria / ml.

In any case, a DC voltage of 80 volts is applied for a period of 5 seconds. At the same time, the intensities of photon emission (in number of photons / 100 ms) are measured over the period of 5 s. The measurement is repeated three times. The mean values and scatterings of the three measurements are formed. Table I contains the results. Table I
The result shows that this method can significantly detect 10 bacteria / ml.
