

Patents:

Pat 1:

Inventors: Lindinger, A; Heyne, K

Laserpulsformungsverfahren

Application number: DE 10 2012 200 858.6

Applicant: Freie Universität Berlin

Filing date: 20.01.2012

Pat 2:

Inventors: Heyne, A; Heyne, K

Method for polymerizing monomer units and/or oligomer units by means of infrared light pulses

The invention relates to a method for polymerizing monomer units and/or oligomer units. Said method is characterized in that the energy required for polymerization is introduced by means of infrared light pulses into the monomer units and/or oligomer units to be polymerized, wherein the infrared light pulses have a wavelength of 2500 to 20000 nm, an intensity of more than 10^{14} W/m², a duration of more than 8 fs and less than 3 ps, and a substantially linear polarization. The invention further relates to a corresponding use of infrared light pulses.

Publication number: WO 2012168302 (A1)

Applicant: Freie Universität Berlin

Priority date: 07.06.2011

Pat 3:

Inventors: Rubin, T; Stockmann, M; Heyne, K

Method for determining the metabolic capacity of at least one enzyme

The invention relates to a method for determining the metabolic capacity of at least one enzyme. It comprises the steps of the time-resolved determination of the concentration of a product in the air exhaled by an individual, wherein the product has been created by a metabolism of a substrate, previously administered to the individual, by at least one enzyme of the individual and wherein the product concentration is determined at the least until the maximum product concentration in the air exhaled by the individual is reached, the fitting of a model function to measured values of the product concentration, which were obtained by the time-resolved determination of the product concentration between a start time and an end time, and the determination of the metabolic capacity of the enzyme on the basis of parameters of the model function, which specify the model function. The method is characterized in that determining the metabolic capacity of the enzyme takes place on the basis of at least two parameters of the model function, with the proviso that the maximum value of the model function and the time constant of the model function are not selected as parameters at the same time, insofar as the model function is a mono-exponential function, and with the further proviso that the start time and/or the end time are not selected as parameters.

Publication number: WO 2012140213 (A2)

Applicant: Humedics GmbH

Priority date: 13.04.2011

Pat 4:

Inventors: Rubin, T; Heyne, K

Measurement device and method for analyzing a sample gas by infrared absorption spectroscopy

A measurement device and a method for analyzing a sample gas by infrared absorption spectroscopy are described. The measurement device comprises: a measurement chamber with the sample gas to be analyzed, a laser being arranged in relation to the measurement chamber such that light being emitted from the laser radiates through the measurement chamber, a detection device detecting the light being emitted from the laser and radiated through the measurement chamber, and an evaluation unit evaluating signals generated by the detection device regarding a light absorption occurred in the measurement chamber. Provision is made that the laser is a narrowband emitting laser, the line width of which is smaller or equal to the width of an infrared absorption line to be measured of the sample gas, the laser is designed and arranged such that the laser frequency is varied periodically within a defined spectral range, wherein the laser frequency and its variation are chosen such that at least one infrared absorption line to be measured of the sample gas lies in the defined spectral range, and the detection device is designed and arranged such that it detects the light being emitted from the laser and radiated through the measurement chamber in such a time-resolved manner that the light absorption can be determined frequency-resolved within the defined spectral range, wherein the detection device carries out a single absorption measurement within 10^{-5} s or faster. Furthermore, the measurement device is suited and can be arranged to measure the respiratory gas of a human or animal as sample gas, wherein the respiratory gas exchanges in the measurement chamber only by the respiration of the human or animal, and the respiratory resistance of the measurement device is less than 60 mbar.

Publication number: WO2011076803 (A1)

Priority number: WO2010EP70407 20101221; DE200910055320 20091224

Applicant: Humedics GmbH

Priority date: 24.12.2009

Patent granted: DE

Pat 5:

Inventors: Heyne, K

Method for determining the liver performance of a living organism by means of quantitative measuring the metabolization of substrates

A method for determining the liver performance of a living organism, in particular a human, comprising administering at least one ^{13}C labelled substrate, which is converted by the liver by releasing at least one ^{13}C labelled metabolization product, and determining the amount of the at least one ^{13}C labelled metabolization product in the exhalation air over a definite time interval by the means of at least one measuring device with at least one evaluation unit is disclosed. Using this method, it is possible to describe the measured initial increase of the amount of the at least one ^{13}C labelled metabolization product in the exhalation air using a differential equation of first order and to determine a value A_{max} (DOB_{max}) and a time constant τ of the increase of the amount of ^{13}C labelled metabolization product from the solution of the differential equation of first order.

Publication number: WO2011076804 (A2)

Priority number: DE200910055321 20091224; WO2010EP70408 20101221

Applicant: Humedics GmbH

Priority date: 24.12.2009

Patent granted: DE

Pat 6:

Inventors: Rubin, T, Beckmann, J; Heyne, K

Method for determining the 14C content of a gas mixture and arrangement suitable therefor

A method for determining the 14C content of a gas mixture in which 14C isotopes are present as molecule constituents, is provided. The gas mixture is provided in a measuring space, wherein infrared laser radiation is supplied to the measuring space as measurement radiation. The laser radiation to be supplied to the measuring space is deflected such that it passes through the measuring space a plurality of times by interacting with the gas mixture, wherein the laser radiation is supplied to a detector, in order to determine the absorption of laser radiation by the gas mixture and therefrom determine the 14C content. For generating the laser radiation a pulsed laser is used, which as measurement radiation emits laser pulses with a pulse duration of less than 5 µs, which are supplied to the measuring space.

Publication number: WO2011023412 (A2)

Priority number: WO2010EP05331 20100827; DE200910039051 20090828;
DE200910045458 20091007

Applicant: Freie Universität Berlin

Priority date: 28.08.2009

Patent granted: DE

Pat 7:

Inventors: Hartmann, M; Molkenthin, K; Heyne, K

Pulse shaper and laser with pulse shaper

A pulse shaper for compensating group runtime effects is provided. The pulse shaper comprising a first and a second dispersive element. An optical pulse can be coupled to the pulse shaper along a coupling direction such that said pulse exits from the pulse shaper after passing through the first and the second dispersive element along an exit direction. The first and the second dispersive element are formed and arranged to be movable relative to each other such that the path length to be traversed by the optical pulse through the first and the second dispersive element after coupling to the pulse shaper can be adjusted without any change in an offset between the coupling direction and the exit direction. The first and the second dispersive element are arranged in such a way that the shape of the optical pulse experiences a change as the pulse travels through the pulse shaper.

Publication number: WO2009135870 (A1)

Priority number: DE200810022724 20080506; WO2009EP55465 20090506

Applicant: Freie Universität Berlin

Priority date: 26.05.2008

Patent granted: DE

Pat 8:

Inventors: Stockmann, M; Riecke, B; Heyne, K

Apparatus for spectroscopically analyzing a gas

The invention relates to an apparatus for spectroscopically analysing a gas, said apparatus having at least one radiation source (1), at least one detection apparatus (12; 20), at least one sample chamber (13) and a system of optical elements (4; 5; 6; 7; 9; 10; 11; 18; 19) which is intended and set up to direct at least part (3b) of the radiation (3) emitted by the radiation source (1) through the sample chamber (13) onto the detection apparatus (20), wherein the sample chamber (13) is used to hold a gaseous sample which contains the gas to be analysed, and wherein the apparatus is configured in such a manner that the sample can continuously flow through the sample chamber (13), and means (16) are provided for the purpose of determining the pressure and/or the volume and/or the concentration of the sample in the sample chamber (13). The invention also relates to a corresponding method for spectroscopically analysing a gas.

Publication number: DE102006018862 (A1); AU2007228959 (A1)

Priority number: WO2007EP02525 20070316; DE200610012740 20060317;
DE200610018862 20060413

Applicant: Freie Universität Berlin

Priority date: 17.03.2006

Patent granted: AU

Link: http://worldwide.espacenet.com/searchResults?compact=false&ST=advanced&IN=karsten+Heyne&locale=de_EP&DB=EPODOC