

Sensors for the Food Technology

These technology offers originate from the different partners of the project PIPE. If you are interested in one or more of these offers, please contact the responsible contact named below. We are looking forward to providing you more detailed information.

Biosensor for organic molecules in liquid media

This automated biosensor system allows a fast, economical and fluorescence-based detection and analysis of organic molecules in liquid media.

Here, the total internal reflection fluorescence (TIRF) on a specially coated substrate in combination with a binding inhibitor test is used.

With this method, liquids of different nature, such as fruit juices, milk etc can be analyzed quickly. The process allows the examination of samples to several different analytes, which may include pesticides.

Particle sensor

The presented method for measuring light scattering allows the determination of the size, size distribution and quantity of particles in the nanoscopic range and its development over time.

Thus, it is possible to determine the turbidity of wine, juice or beer.

Sensor for the determination of IR-active ingredients in liquids

This sensor is used for quantitative and qualitative analysis of IR-active ingredients, aqueous or non-aqueous liquids and is therefore suitable for the analysis of beverages.

Thereby, the invention is based on an infrared source which passes IR-radiation through an ATR-body whereupon resulting signals can be detected and evaluated.

Infrared sensor

This infrared measuring device serves for the determination of parameters, preferably in an aqueous medium by means of ATR and quantum cascade lasers as a source of electromagnetic radiation. The invention allows a simultaneous determination of several constituents of a sample and the determination of the present concentration, even for small sample volumes (100 µl). Moreover the ATR-body can be used as a dipping probe.

Mass sensitive thick layer resonator

The present invention allows a high-resolution thickness measurement and concentration determination of analytes in gaseous and liquid media by using a piezoelectric sensor array, which has got a mass sensitive thick layer resonator. This sensor system is suitable for process-technological and medical-chemical-biological applications in process technology and food technology.

Temperature sensor

The presented temperature sensor consists of a material layer, which changes itself in dependence of the temperature and whose change can be measured via electrodes.

Material density sensor based on left-handed line resonators

The sensor is suitable for mounting on or in objects of all kinds and requires no power source, so that a comprehensive monitoring of the temperature range during transports is possible.

Non-contact reflection measurement

The new material density sensor enables contactless and highly sensitive mass flow measurements of dielectric materials transported in pipe lines or with conveyor belts. The concept is based on so-called left-handed line resonators and meets the requirements of a short sensor length, low frequencies to reduce sensor costs and an adequate sensitivity to enable a high resolution of changes in permittivity.

The presented invention relates to an optical system for a non-contact reflection measurement and a corresponding procedure.

The present arrangement, which consists of a light source, a collimator with a lens and a detector allows the reduction of unwanted back reflections from the lens by means of a perforation of the lens and/or by means of a non-reflective aperture which is located between the lens and the detection fiber. The non-contact reflection measurement can be used for

- a humid detection in production lines
- quality control
- food inspection
- chemometrics in food for the determination of ingredients.

Sensor for the de- tection of THz waves

This sensor serves for the detection of millimeter-waves with a field-effect transistor which is located together with an antenna structure on a single substrate.

The sensor can be used for example for the imaging of THz radiation in quality controls.

Resistive mixer high-frequency signals

The new resistive mixer for mixing and detecting an electrical or electromagnetic high-frequency signal has got a distributed arrangement of resistances and capacities.

Because of these characteristics, much better high-frequency signals than previously known in the state of the art can be achieved, so that important applications can be found in the imaging of THz radiation in quality controls.

Electro-optical camera (EO-Cam)

This electro-optical crystal based invention is about a novel electro-optical camera which allows a particularly low-noise, extensive detection of high frequency radiation with a plurality of pixels. The invention can be used for the imaging of THz radiation in quality controls.

2D and 3D imaging with terahertz ra- diation

The present invention for a three-dimensional detection of an object by the use of electromagnetic high frequency radiation essentially consists of a radiation source, a receiver and a signal source. Applications can be found in the imaging of THz radiation in quality controls.