

## Sensors for Safety Engineering

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.

### Recording and analysis system for illicit substances

The presented invention allows an automated recording and analysis of substances of various kinds, located on escalators and lifts. Collecting the samples is thereby achieved through the contact between the surface of the escalator or lift and the surface of the sample collection unit during the relative movement between the two surfaces. The collected samples are then transferred via a transfer unit to a detector unit, which allows an analysis of demanded substances. An important application of this invention is the recording and analysis of illicit substances, such as explosive substances or drugs.

### 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 applications in safety engineering.

### Sensor for the detection of THz waves

This sensor suitable 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 the imaging of THz radiation in security sectors.

### **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 security sectors.

### **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 security sectors, in medicine or 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 security sectors.