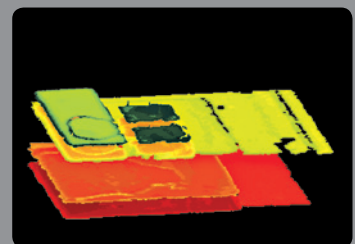


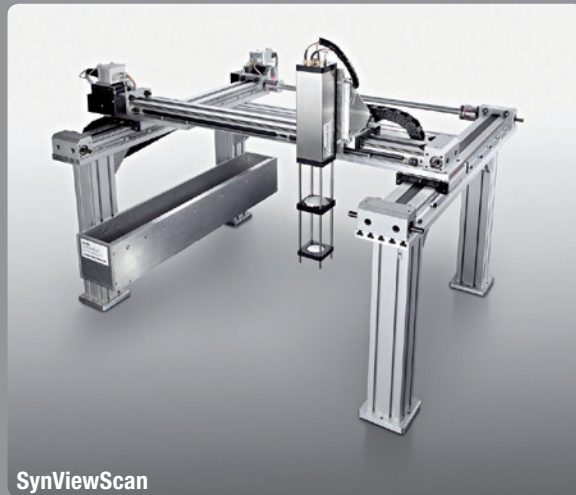
SynViewScan 3D Terahertz / Millimeter Wave Imaging

**Table-top 3D imaging solution
for instant application evaluation
in quality control and research departments**



SynViewScan

Key Features



SynViewScan



SynViewHead

DESCRIPTION	VALUE	COMMENT
Operation mode	coherent FMCW + xy raster scan	
Frequency range	0.07 THz – 0.11 THz (SynViewHead 100) 0.23 THz – 0.32 THz (SynViewHead 300) 0.84 THz – 0.87 THz (SynViewHead 850)	other frequency ranges are available on request
Dynamic range	better than 60 dB (SynViewHead 100) better than 50 dB (SynViewHead 300) better than 40 dB (SynViewHead 850)	highest measurement speed
Spatial resolution	3 mm (SynViewHead 100) 1 mm (SynViewHead 300) 0.4 mm (SynViewHead 850)	depends on the customer specific optical configuration
Range-, depth- and thickness resolution	better than 20 μm (typ.)	for any single interface within a 2 mm window (SynViewHead 300) within a 6 mm window (SynViewHead 100) within a 10 mm window (SynViewHead 850)
Depth penetration	several centimeter	depending on the material under test
Scan area	650 mm x 650 mm (max. Sample Height 250 mm)	other scan areas are available on request
Measurement time (full scan area)	15 minutes	full size 3D image
All values require appropriate calibration and are subject to change without notice.		

Delivery includes: scan unit with measurement head, data acquisition unit with dual core PC, motion controller, measurement and data analysis software. The delivered SynViewScan is a stand alone plug-and-play Terahertz imaging system.

Please note that additional SynViewHeads are also sold separately.

Other scan areas and modes (e.g. rotational) and multi channel systems for higher throughput are available on request. Please contact us now for further information and a quotation.

GLOBAL SALES VIA



TOPTICA Photonics AG

Lochamer Schlag 19 | 82166 Graefelfing (Munich), Germany
T +49 89 85837-0 | F +49 89 85837-200
sales@toptica.com



SynViewScan Technology

The SynViewScan system is a universal table-top 3D terahertz imaging solution. It is based on fast and reliable all-electronic technology.

Operating frequencies in the overlap region between millimeter and terahertz waves allow an inside view into many objects and an **excellent spatial and depth resolution**. The SynView technology is also efficient and quick. A scan of the full area of 650 mm x 650 mm is achieved in only 15 minutes. This includes a depth scan of up to 30 cm. Even faster imaging is possible using multiple SynViewHeads.

THz imaging for non-experts

100% quality verification

80% less sc

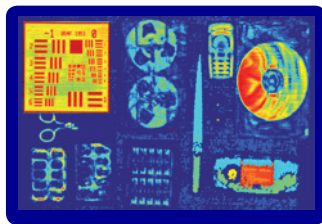
Typical Applications:

- Package Inspection
- Quality Control: Identification of Hidden Defects
- Evaluation of Security Screening Applications
- Hidden Surface Characterisation
- On-line Thickness Control of Coatings
- Surface Tomography of Rough Surfaces

Photography:



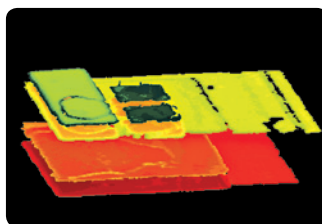
Terahertz Image:



Photography:



Terahertz Image:



Package Inspection:

This example shows the various display modes of data taken from several objects. The excellent 3D data from the SynViewScan in combination with the included imaging software allows to identify and visualize the different objects. By evaluating the obtained images, it is possible to define the optimum setup for the industrial inspection of a specific sample. Examples of using terahertz imaging for package inspection can be found in the pharmaceutical and food industry.

Quality Control (Defect Identification):

One of the main applications of millimeter und terahertz imaging is the possibility to look into objects, i.e. to obtain a full a full three dimensional image of the object under test. The SynViewScan allows the visualization of individual layers to ensure the identification of hidden defects like holes, cracks, missing glue, and many others. The included SynView-Scan imaging software is easy to use and allows a detailed investigation of the full 3D data set.

plug-and-play

easy to use

30% less material used

As opposed to expensive research systems, the SynView base technology allows the cost-efficient use of THz imaging for scientific and industrial applications.

Our all-electronic approach, in combination with our synthetic viewing Technology, leads to **quick and efficient measurement times** while maintaining an **excellent image quality**. This allows our customers to explore and apply this new technology in their laboratory and their quality control process.

A decisive advantage of THz radiation over x-rays is its non-ionizing nature. X-rays are ionizing and therefore pose significant health risks for humans and animals.

THz radiation has a very low photon energy, meaning there is no danger that chemical bonds are broken up or the examined material is modified in any way. Also, the power being emitted is very low, leading only to insignificant heating. Therefore, THz radiation **can principally be used close to humans**.

rap *post-deadline paper accepted*

mass market application found

**Explore novel NDT applications. Find new ways for quality control.
Create a material database. Evaluate security applications.**

What's your idea?

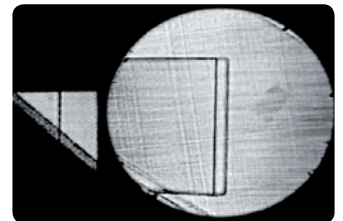
Hidden Surface Characterisation:

Terahertz waves easily penetrate foam and plastic structures. It is therefore possible to characterize the layers and materials hidden below such structures. One example is the surface characterization of carbon fiber reinforced plastic (CFRP). The layer structure of the CFRP is clearly visible in the Terahertz image even under a thick layer of many centimeters of heat insulation foam. In addition, the glue between the CFRP and the foam can be inspected for any irregularities.

Heat insulation foam above CFRP:



Terahertz Image of CFRP surface:



Exploration of Security Applications:

The SynViewScan system is ideally suited to explore the use of millimeter and terahertz wave technology for security applications. The appearance of various suspicious objects under different cloth types can be studied. Different optical configurations can also be investigated. The example here shows a hidden weapon on a mannequin, which is clearly recognized in the Terahertz image. It is also easily seen that the belt-buckle and some body parts are also visible.

Mannequin with hidden weapon:



Photo with Terahertz Image (red):

