THz detection and spectroscopy

Contactless probing for the characterisation and identification of suspicious molecules

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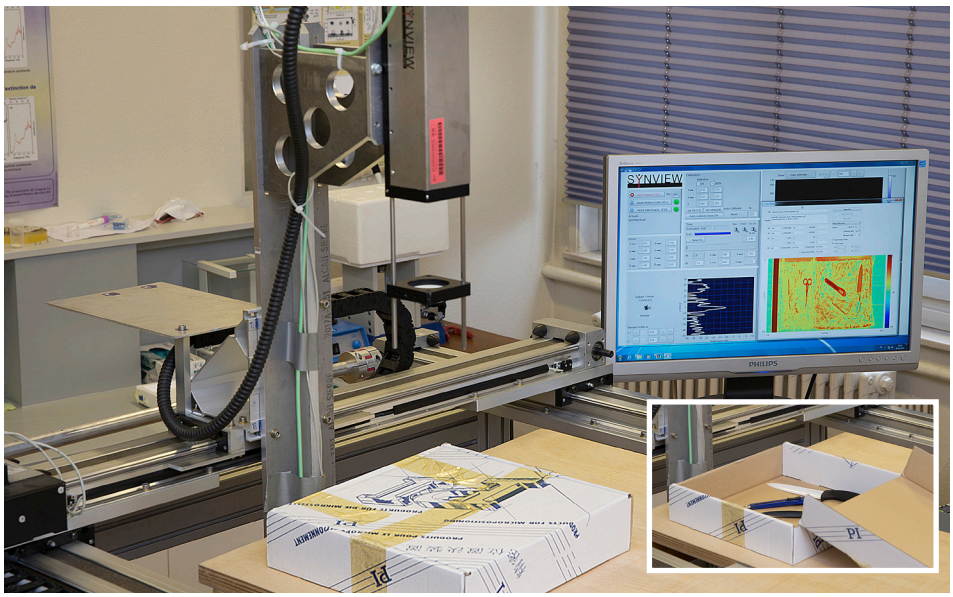
ISL develops novel methodologies and new components in THz spectroscopy in order to:

- fill up the analytical gap between photonic spectroscopy (infrared) and electronics (radio waves)
- detect hazardous, illegal, counterfeit or contaminated substances
- build up compact embedded solutions.

Terahertz spectroscopy relies on the absorption features of electromagnetic radiation by materials at frequencies of molecular bonds.

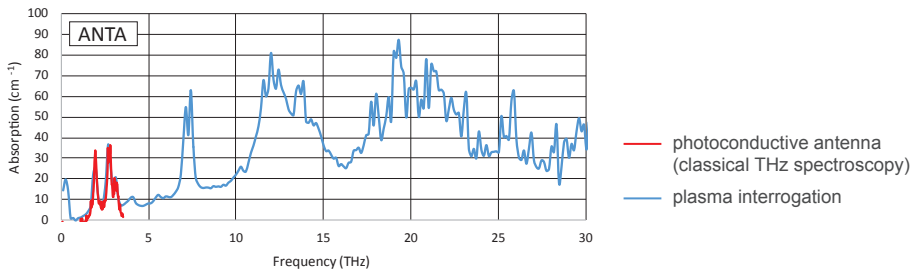
THz imaging/spectroscopy for security



Safe non-ionising imaging though packaging (non metallic)

THz spectroscopy at safe standoff distance

- Standoff THz radiation produced by the plasma of laser filaments
- Wideband technology: increase in the frequency range by a factor of 10



Advantages

- Safe
- Uses the very characteristic THz signature of a material

Industrial applications

- Morphological analysis of molecules
- Characterisation of isomers
- Measurement of the propositions contained in mixtures
- Study of propulsive powders
- Detection of counterfeit or contaminated molecules
- Detection of illicit substances

Applications in the security/defence domain

- Detection and characterisation of suspicious molecules (drugs, explosives, etc.)

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