THz Radiation: Reliable Measurements Today and Tomorrow

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THz radiation, due to its unique physical characteristics, is beginning to find increasing use in commercial/industrial applications. [1]
As in any application involving precise use of light, measurement becomes an important issue.
Because the practical use and measurement of THz radiation is a relatively new challenge – till recently it was mainly still in the R&D stage - this region of the spectrum has remained untapped for many years, and the technology is nowhere near mature.
For example:

- Sources are complex; there is as yet no such thing as a simple THz source component (as there are simple IR laser diodes). They are weak, and in many ways more like radio than light (beams are not tightly collimated, alignment is not trivial, etc.).
- Detectors are also complex, and are also weak and noisy, making THz radiation hard to detect – let alone measure.
- Calibration of THz sensors is not yet on solid ground.

Even with the above difficulties, in research institutions around the world THz is attracting increasing levels of attention.
Researchers are developing sources, detectors, and systems – all of which they must be able to characterize accurately. Science and technology are able to do what they do because they are quantitative. We are undoubtedly seeing the beginning of a potentially large field, and as applications for THz radiation develop and mature, the need for reliable and accurate THz measurement solutions becomes ever more urgent.

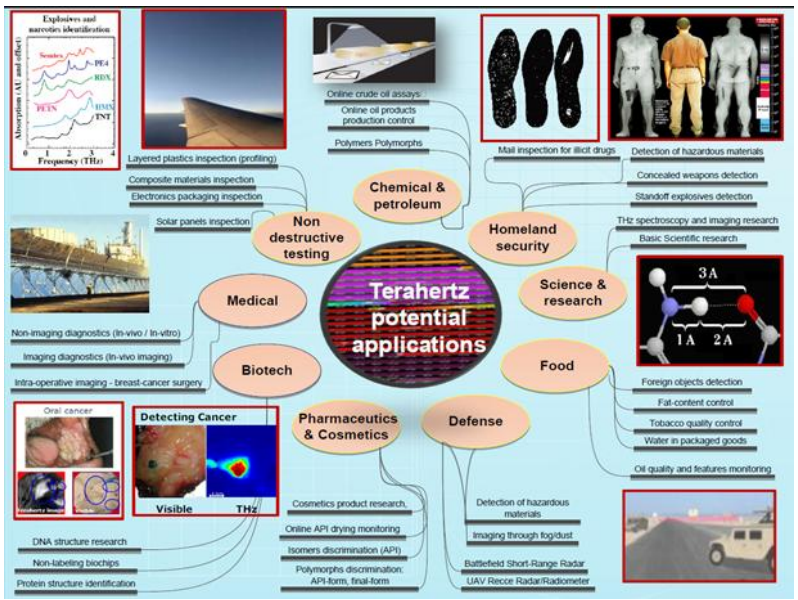

Figure. [1]. MKS Ophir internally THz presentation, Early stage of a potentially large field as showed in the picture below.

References

[1] THz Today and Tomorrow, Mark Slutzki, 2017 MKS Ophir *webinar*