



New Terahertz oscillator generates up to 0.1 mW of average power concentrated in the atmospheric transparency window at 1.5 THz



Eugene, OR, June 15th, 2011. Microtech Instruments, Inc. announces its new terahertz source, the Terahertz Parametric Oscillator—TPO-1500—which delivers up to 0.1 mW of average power (>150 mW of peak power). Its central wavelength of 1.5 THz and spectral width of 100 GHz fit perfectly into one of the atmospheric transmission windows, making it an ideal source for terahertz imaging. Very high peak power makes TPO-1500 suitable for imaging systems employing nonlinear optical effects such as pump-probe or time domain terahertz spectroscopy, while sufficiently high average power makes it suitable for thermal detector array imaging.

<http://www.mtinstruments.com/thzsources/index.htm>

Operation of TPO-1500 is based on difference frequency generation in quasi-phase-matched Gallium Arsenide crystal placed inside an optical parametric oscillator pumped by an ultrafast fiber laser. This technology was developed by Microtech Instruments in collaboration with researchers at Oregon State and Stanford Universities, and the development program was originally funded by Defense Advanced Research Projects Agency (DARPA) in 2004 and more recently by Air Force Office of Scientific Research (AFOSR).

“We are really excited to introduce this product after seven years of research and development,” commented Walter Hurlbut, R&D Manager at Microtech. “In spite of seeming obvious, inserting gallium arsenide into an optical parametric oscillator required balancing the various nonlinear effects as we have now done. This resulted in generation of 20 times more terahertz power and more importantly this power is concentrated in a narrow spectral range, enabling much higher spectral brightness compared to other optical THz sources. TPO-1500 is likely to be first in a series of new products for Microtech, as this technology is extendable to higher power sources, covering multiple spectral bands. While this first product is a bread-board-based system suitable only for research labs, it is potentially scalable to more practical applications as well.”

TPO-1500 complements the electronic terahertz sources manufactured by Microtech Instruments. The electronic terahertz sources are based on backward wave oscillators (BWOs) combined with frequency multipliers, which work well up to 1.4 THz but run out of power at 1.5 THz and above. Also, TPO-1500’s high peak power makes it more suitable for nonlinear optical applications.

Microtech Instruments is a leading manufacturer of terahertz components and systems, including terahertz spectrometers, generators, and detectors. Committed to innovation, Microtech collaborates with leading research organizations worldwide.

For more information, visit www.mtinstruments.com, or contact Renee Isley at sales@mtinstruments.com.