

## **Performance Characteristics of a Smith-Purcell Tunable Terahertz Source**

*Michael Mross, Thomas H. Lowell, Robert Durant and Maurice F. Kimmitt*  
Vermont Photonics Inc.

A Tunable Terahertz Source (TTS) is being developed for commercial use by Vermont Photonics under exclusive license. The TTS is based on the Smith-Purcell free electron laser first reported by the late Professor John E. Walsh and his co-workers. (Urata et al. Phys. Rev. Lett. **80**, 516 (1998)). The TTS is continuously tunable from less than 0.3 THz to more than 3 THz ( $10\text{-}100\text{ cm}^{-1}$ ). It can be operated CW or pulsed, with rep rates from DC to kHz. Detailed output characteristics will be presented along with examples of use in spectroscopy systems using a grating monochromator, a Fourier transform interferometer or a scanning Fabry Perot etalon. A comparison with other THz sources will be given.