Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

**High-Power Terahertz Photoconductive Antenna with Schottky and Ohmic Contact Electrodes** CHRISTOPHER KIM, Temple University, DONG HO WU, BENJAMIN GRABER, U. S. Naval Research Laboratory — Time domain terahertz (THz) spectroscopy (TDTS) has been widely adopted for many applications in science and industry, such as chemical and materials analysis and detection of hazardous materials. TDTS systems regularly use a photoconductive antenna fabricated on a GaAs substrate as the THz source, as it can generate a wideband THz pulse very efficiently. Increasing the coherent THz beam power is essential for high signal-to-noise spectroscopy. However, conventional photoconductive antennas only generate 10 nW- 100 W. Our experiments show that the power and stability of the coherent THz beam emitted from a photoconductive antenna can be influenced by the qualities of the electrodes' metal-to-semiconductor contact. Therefore, we investigated THz emission from photoconductive antennas fabricated with Schottky and Ohmic contact electrodes. Using a TDTS system, we characterized the THz output for each electrode contact variation and found that Schottky contacts could produce much stronger THz beams, while Ohmic contact electrodes were more prone to damage. Using these contact optimizations, along with other antenna optimizations, we have demonstrated a photoconductive antenna capable up to 3 mW of THz power.

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Date submitted: 11 Nov 2016 Electronic form version 1.4