



## A MAGNETIC-FIELD-TUNABLE TERAHERTZ OPTOELECTRONIC TRANSDUCER

WARF: P230140US01

Inventors: Jiamian Hu, Shihao Zhuang, Chang-Beom Eom

### The Invention

UW-Madison researchers have designed optoelectronic transducers that convert a femtosecond (fs)-timescale laser pulse into an a.c. electrical current pulse with an extremely high frequency and a high quality factor (Q.) Both the frequency and amplitude of the a.c. electrical current pulse can be dynamically tuned by the application of a varying bias magnetic field. The optoelectronic transducers are based on a trilayered freestanding membrane that functions as both an acoustic cavity and a magnon cavity. The freestanding membrane includes an electrical conductor layer, a magnetic insulator layer, and a dielectric layer arranged in a vertical stack.

### Additional Information

#### For More Information About the Inventors

- [Jiamian Hu](#)
- [Chang-Beom Eom](#)

#### Tech Fields

- [Semiconductors & Integrated Circuits : Design & fabrication](#)

For current licensing status, please contact Michael Carey at [mccarey@warf.org](mailto:mccarey@warf.org) or 608-960-9867