

# TUNABLE SURFACE PLASMON INFRARED

US Pat. No.: 8,009,356

Technology Readiness Level: 5

*Key components of this technology have been demonstrated in relevant environments*

There is a need for improved active infrared optical elements such as modulators. Extraordinary optical transmission (EOT) through subwavelength apertures allows for tailored filtering based on plasmon resonance. Until now EOT devices have not fully achieved the need for variable attenuation capabilities.

Sandia has developed an EOT device with a tunable surface plasmon resonance wavelength, where the controllability is derived from variation of the dielectric constant in the semiconducting material in contact with the grating.

## TECHNICAL BENEFITS

- Minaturizable
- Tunable Control of Dielectric
- Microfabricated

## INDUSTRIES & APPLICATIONS

- Infrared Modulator
- IR Counter Measures
- Photonic Circuitry
- Metamaterials
- Chemical Sensing
- Variable Attenuation

