



Sandia National Laboratories

# Tunable Surface Plasmon Infrared Modulator

## POTENTIAL APPLICATIONS

Infrared Modulator

IR Counter Measures

Photonic Circuitry

Metamaterials

Chemical Sensing

Variable Attenuation

## BENEFITS

Minaturizable

Tunable Control  
of Dielectric

Microfabricated

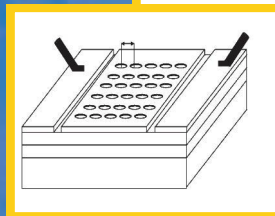
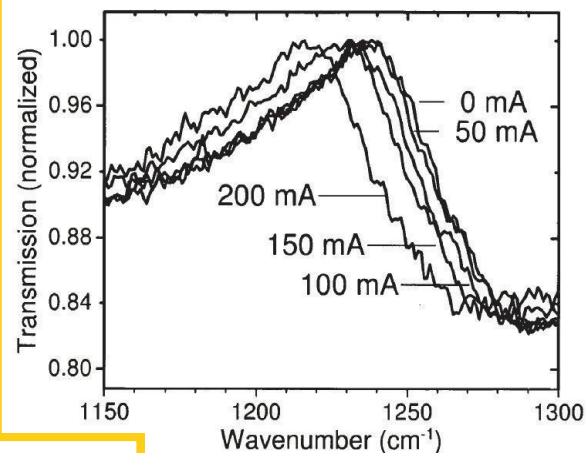
## INTELLECTUAL PROPERTY

US PATENT # 8,009,356  
(SD #10692)

## TECHNOLOGY SUMMARY

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 semi-conducting material in contact with the grating.



## TECHNOLOGY READINESS LEVEL

Sandia estimates this technology at approximately a TRL 5. Key components of this technology have been demonstrated in relevant environments.

## LICENSING CONTACT

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Sandia National Laboratories

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