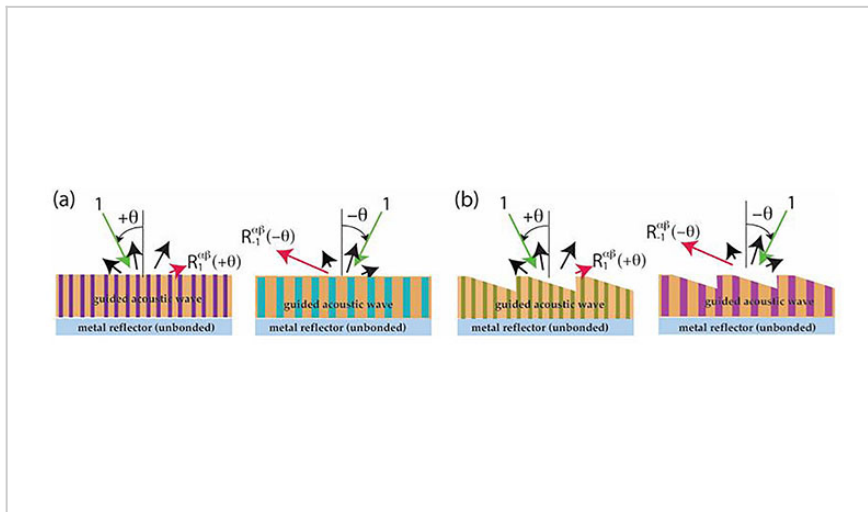


# One-way Optical Device for Medical Imaging and Other Applications

ID# 2016-4465



Nonspecular optical reflections

## Technology Summary

One-way devices are vital in imaging systems because they help prevent light reflections from affecting the resolution of a picture. In systems using low frequency waves, which have a limited magnification capacity, one-way devices take the form of isolators. However, prior to this invention, one-way devices have not existed in optical imaging techniques. The present invention provides for a system of altering optical reflection via a dynamic control of an ultrasonic/acoustic guided wave field in an acousto-optical transparent plate. The idea is to alter light reflection characteristics by changing the ultrasonic/acoustic field in a plate so that a first optical plane wave impinging from the left quadrant, and a second optical plane wave impinging from the right quadrant may be diffracted differently.

## Application & Market Utility

The invention would be the first one-way optical device to exist in an imaging system using the terahertz regime to magnify matter at the nanometer scale. This invention is particularly applicable in bio-medical diagnoses and semiconductor device inspections, wherein sharper 2D and 3D images would be enabled for microscopy and tomography. On-chip implementation could even facilitate integration with electronics and boost hi-fi internet.

## Next Steps

Seeking research collaboration and licensing opportunities.

TECHNOLOGY READINESS LEVEL

1-3

### Seeking

Investment | Licensing | Research

### Keywords

- one-way device
- medical imaging
- microscopy
- tomography
- 2D and 3D imaging

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