

# **Tuning the Resonant Frequency of Microstrip Patch Antenna in LWIR**

**MICANS INFOTECH**

# ABSTRACT

This paper proposes a new analytical method of tuning the resonant frequency of optical microstrip patch antennas. For this method, the changing of resonant frequency of microstrip patch antenna due to coupling additional reactance can be clearly determined. In this paper, this method verifies that the TM<sub>10</sub> resonant frequency increases by adding a ridge with variable width and height under the patch antenna. A range of resonant frequencies tuning from 20.75 to 32.4THz, by varying ridge width from 0 to 0.5um and ridge height from 0.1 to 0.6um are demonstrated.

# EXISTING SYSTEM

- Due to improved fabrication capability, it utilize radio frequency (RF) techniques and exploit the geometric shapes of optical antennas and their fundamental performance characteristics.
- For optical applications, trying to translate the advantages of patch antennas in RF to the optical spectrum.

# PROPOSED SYSTEM

- The rectangular patch antenna made of gold (Au) is designed with dimensions  $0.6\mu\text{m} \times 1\mu\text{m} \times 0.06\mu\text{m}$ .
- A silicon substrate with and a ground plane under the rectangular patch form a resonant cavity.
- Gaussian beam illumination with beam-spot size equal to  $10\mu\text{m}$  is normally incident on the antenna plane.

# SYSTEM REQUIREMENTS

## HARDWARE REQUIREMENTS:

- Processor - intel core i3
- RAM - 2GB
- Hard Disk - 20 GB

## SOFTWARE REQUIREMENTS:

- Ansoft HFSS(High Frequency Structure Stimulator)

# REFERENCE

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