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Study on the fano resonance of coupling M-type cavity based on surface plasmon polaritons

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Highlights

1. We proposed a MIM waveguide structure with a M-type cavity and baffles, which has sharp asymmetric Fano resonance line.
2. For the positive M-type cavity structure, the sensitivity is 760nm/RIU and its maximum figure of merit is 9.9×10^4 .
3. The wavelength of positive M-type cavity structure resonance peak has a linear relation with the length L and height H .
4. The sensitivity of improved symmetrical M-type cavity structure is 720nm/RIU and its maximum figure of merit is 1.56×10^5 .
5. The resonant wavelength of the structure can be significantly adjusted by height H and slightly adjusted by length L .

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