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High Q-factor Surface Plasmon-Polariton Resonance in a Plasmonic Perfect Absorber in the Terahertz Regime J ROBINSON, K BHATTARAI, S SILVA, J ZHOU, Univ of South Florida — Perfect absorption of light has become one of the exotic properties of plasmonic metamaterials which are popular due to the variety of feasible applications, particularly using them as a chemical/bio sensor. We present the plasmonic perfect absorber that exhibits strong surface plasmon-polariton (SPP) resonance. Due to the Fabry-Perot cavity effect, the SPP resonance is significantly sharpened and the Q-factor reaches 63.1. Correspondingly, the electric field of the surface wave is largely enhanced. Furthermore, we have shown numerically that the absorption peak is independent of the incident angle. The high Q-factor and enhanced surface wave are beneficial to increase the performances of the sensor and detector devices, especially in the THz regime, where such properties are hard to achieve by natural materials.

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