

19a-C3-2

Fano resonance in surface plasmon polariton mediated extraordinary optical transmission through quasi-periodic subwavelength hole arrays

Institute of Physics, Chinese Academy of Sciences¹, Department of Physics, Univ. of Texas at Austin²,

°Xianggang Qiu¹, Bohong Li¹, Fei Cheng¹, Charlotte Sanders², Gennady Shvets², Chih-Kang Shih²

E-mail: xgqiu@iphy.ac.cn

Three kinds of 12-fold quasi-periodic subwavelength hole arrays have been designed using the same dodecahedral supercell arranged with different local rotational symmetries. Fano resonances associated with spoof surface plasmons in these structures have been studied by far-infrared transmission measurements. The resonant transmission channels of the lowest-order Fano resonance mode have been compared directly between these structures, benefitting from constant non-resonant transmission channel. It is found that the higher is the local rotational symmetry of the supercell array, the higher the transmission intensity and the narrower the linewidth of the Fano resonance.