Quality Factor Study for Cone-metal Shelled Structure

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Abstract

Pure plasmonic mode and hybrid plasmonic mode have been demonstrated. The cone-metal shelled structure is proposed. The two modes have been examined, pure plasmonic mode and hybrid plasmonic mode. At room temperature, the quality factor of the two modes has been compared and we found that the quality factor of hybrid plasmonic mode is 775 when the side angle of the cone structure ranged (60°-70°) whereas the quality factor for pure plasmonic mode is 310 when the side angle of the cone structure ranged (60°-70°). Also, we examined a quality factor of two modes at different temperature and we got an ultra high quality factor for pure plasmonic mode about 1.4 M at 0 K whereas the quality factor for hybrid plasmonic mode is about 70,000 at 0 K.

References

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Index Terms

Computer Science

Circuits and Systems

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Plasmonics, Surface plasmon polarization, Quality factor