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Title

Microscopic model of the THz field enhancement in a metal nanoslit

Source

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Abstract

We discuss the strong THz-field enhancement effect in a metal slit of dozens of nanometers sizes reported recently. Proposed simple microscopic model considers electric charges induced at the edges of the slit by a polarized incident wave. These charges contribute then to the field in the slit. The model is capable of explaining peculiarities of the field enhancement phenomenon such as an inverse frequency dependence of the enhancement factor. It provides closed-form expressions for the enhancement factor and field mapping inside the slit having only one fitting parameter. The model predicts influence of the slit shape on the field enhancement.