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Title

Analysis of periodic metallic nano-slits for efficient interaction of terahertz and optical waves at nano-scale dimensions

Source

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Abstract

We analyze the unique property of periodic arrays of subwavelength metallic slits to allow extraordinary electromagnetic transmission at multiple frequency bands. The diffraction limit in periodic arrays of subwavelength metallic slits is mitigated by excitation of surface waves which assist efficient coupling of a transverse magnetic-polarized incident electromagnetic wave into the TEM waveguide modes of the subwavelength slab waveguides formed by metallic slits. By investigating the geometry dependence of the electromagnetic guided modes supported by periodic arrays of subwavelength metallic slits, we present the design of a periodic array of metallic nanoslits which enables efficient interaction of terahertz and optical waves at nanoscale dimensions. (24 References).