

How Light Emerges from an Illuminated Finite Array of Subwavelength Holes

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The extraordinary optical transmission (EOT) through periodic arrays has been extensively studied both experimental and theoretically since its discovery. However, to the best of our knowledge, all theoretical studies have concentrated on the case of an infinite array. By combining experiment and theory, we have analyzed the influence of the inherent finite size of the arrays. We find an unexpected spatial distribution of transmitted light which is both strongly anisotropic and extremely sensitive to the angle of incidence of the impinging light. This behaviour is explained by a simple model that takes into account the edges of the array and its effect on the emission pattern.