

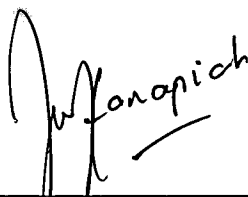
PLANAR FAR-FIELD LENSING WITH PLASMONIC NANO-SLIT ARRAYS

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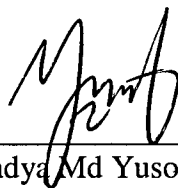
**Final Year Project Report Submitted in
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This Final Year Project Report entitled “**Planar Far-Field Lensing With Plasmonic Nano-Slit Arrays**” was submitted by Mohd Fadhullah Bin Abd Halim, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences and was approved by



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Mohd Fadhullah Bin Abd Halim

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ABSTRACT

PLANAR FAR-FIELD LENSING WITH PLASMONIC NANO-SLIT ARRAYS

In this thesis, a plasmonic nano-slit lensing was investigated theoretically by demonstrating planar lenses based on nano-scale slit arrays in a metallic film. The lens structures consist of optically thick gold films with micron-size arrays of closely spaced and nano-scale slits of varying widths. COMSOL Multiphysics Time-Harmonic Finite-Element (THFE) simulation software was used to design and simulate the research. It was apparent that there was a slight increase of the maximum power as the air slits' widths increase. Whereas, it was also apparent that there was a slight decrease of the maximum power as the gold film's thicknesses increase. Wavelength-scanned was done at various wavelengths ($0.8 \mu\text{m} \leq \lambda \leq 2 \mu\text{m}$) to see the changes of focusing pattern (to show different maximum power).