**Modelling and Simulation of Lorentz-Drude Dispersive Material as Nano waveguides by using FDTD Method**

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**Abstract**

In this work, we theoretically investigate the electric (TE) and magnetic (TM) field behaviors in linear nanowaveguides with different Lorentz-Drude dispersive materials [1]using the finite difference time domain method (FDTD) [2,3,4]. We simulate the propagation of light in different materials to obtain the maximum efficient media. We investigate the amplitude, extinction and dissipation characteristics of the fields in the nanowaveguides and make comparisons to select the appropriate material for our needs [5,6,7]. For electric field we obtain Titanium media for maximum amplitude, Gold media for maximum extinction, and Gold media for maximum dissipation. For magnetic field we obtain Gold media for maximum amplitude, Gold media for maximum extinction, and Silver media for maximum dissipation.

Keywords: Lorentz-Drude Materials, Nano waveguide, FDTD Method.

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