Application of Dielectrics material for Antenna Designing

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Abstract:

In this Research Paper I have presented the simulation results on the radiation pattern from optical antenna at different Bandwidth the optical DR-antennas performed using a band measurement method immersion method to control the refractive index of the medium covering the glass substrate. It has confirmed that the effect of the index mismatch on the radiation pattern is well represented by that of infinitesimal electric dipoles. The index-matched condition, the radiation patterns of Yagi-Uda antennas were obtained experimentally, including the emission along the antenna axis. The radiation patterns predicted by the quasi method. Experimental simulation results are well by the simulation. Therefore, we can conclude that the radiation patterns of the Yagi-Uda antenna in a quasi-homogeneous medium were successfully measured.

1. Introduction

The Optical Antenna has unique attraction for communication community which enables the nanotechnology, nano- devices to controle tele- treatments, IOT, with good impendence bandwidth[1-8]. Antenna is the one of the key component of any transmitting or receiving devices. The antenna material must have suitable for desire requirement of communicational network system with low cost Antenna multi-band or wide –band antennas applications for multiple resonances which have unique capability to full fill our requirement[9-15]. Optical DRA has unique capability to modify as well as tune it's a Reconfigurability of antenna applications. The Dielectric material has unique quality to preserve electric field. The dielectric Antenna depends up several Parametrical Concepts for DRA antenna designing technique must have Antenna impendence which can be converted to optical frequencies, Dielectrics material are playing very important role to design new way fabrication of optical Antenna for modern communication system, requirement in modern Scientific Applications .The World tele-networks has defined an which means up and the terms 'ten' which can be say Stretch. The communication Community has used Optical

Antenna to Convert Energy for free localizes Propagation[16-22] .This can be Possible only Radio-Wave or Micro-Wave Antenna frequency range. Antenna is the one of the key component of any transmitting or receiving devices. The function of light –Emitting devices to enhance its efficiency which play very key .The Dielectric Antenna has great Advantages to Control its directivity. The Optical Antenna Manipulation to improve its bandwidth. We have proposed very recent and new method which has great Advantages to Enhancement of bandwidth with minimum energy loss. The antenna bandwidth enhancement depends upon its Shape, Element, and Materials to make its Perfect condition to Simulated its design for Fabrication of Antenna with low profile making cost. The DRA antenna has Key Applications to provide technology for devices like cellular Phone, televisions which have mostly used in Radio wave or Micro Wave Regime Scale of EM Spectrum. EM- Antenna in the field of Optics because it has great Advantages to explore it ability for the purpose to establish Radio wave or microwave Antenna theories to develop Communication System with high efficient method to enhance the characteristic of DRA antenna for high permittivity materials. In this research article we proposed high efficiency of Antenna to controls its configurability[23]

.This research work will be very helpful for future challenges of optical DRA design as well as benefited to antenna community. The optical properties has directly concern with strong system as well as electric and magnetic energy of materials[24] .The dielectric has great Advantage to explain about various Phenomena in electric, nanoelectronic, optics, opto-electronic, physics, solid state physics, biophysics. In the modern approach to dielectric standard model can use to placed on top of DRA Antenna to generate circular polarization field

2. Radiation Properties of Antenna

The device surface into lateral optical propagation paths parallel to the device surface, within appropriately designed semiconductor thin-film device structures, due to the introduction of a lateral wave vector component in the scattered nano- wave. Metals can synthesize by thin film deposition on a low-surface-energy dielectric followed by thermal annealing. The physical properties, of nanoparticles have great approaches for the engineering of device behaviour, in semiconductor optoelectronic devices incorporating metal and dielectric nanostructures. Design and fabrication of optical antenna system that receives and transmits optical signals. Metals has no longer possess high conductivity in the optical domain, but rather they are described as materials whose relative permittivitys . The optical plasmonic material their interaction with electromagnetic wave at optical frequencies is significantly different from that in microwave and radio frequency RF domains. Therefore, the conventional antenna design techniques maturely developed at microwave or RF frequencies need to be revised properly for optical wavelengths, which makes the design of optical antenna a challenging task to design optenna. There have been several optical antennas proposed by exploiting the plasmonic features of metals in the optical nano regime. The subwavelength scale of particles near their scattering resonance are of special interests for design of optical antennas. The interaction of the particles with the electromagnetic wave is then relatively straightforward to describe, making it a useful approach for optical antenna design. In one of our previous works we have presented a design of optical antenna system with feeding mechanism has been included .In this research work we have explored the concept of optical input impedance value of optical nanoantennas, as well as providing a powerful tool for tuning and designing optical antennas at desired wavelengths range .

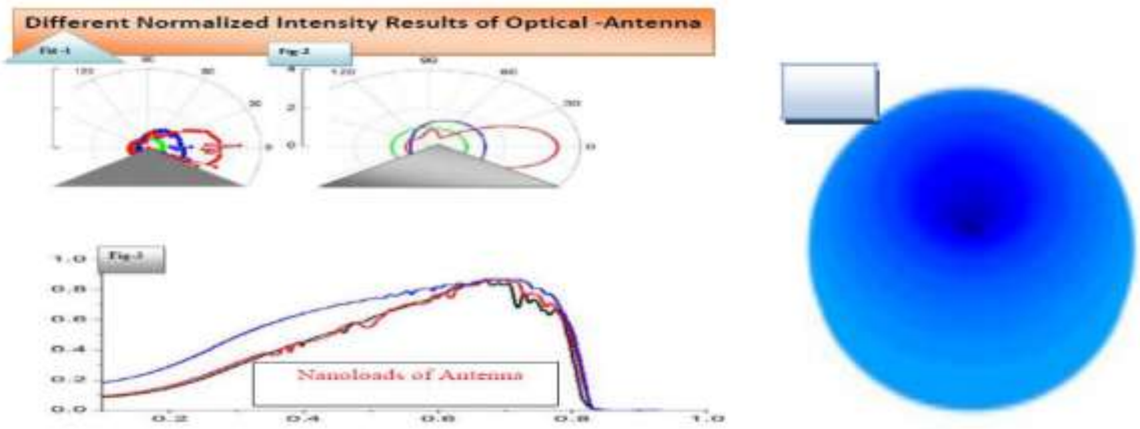

Fig-4

3. Conclusions

We have reviewed several recent advantages and applications of optical antenna. In particular, our review paper has focused on linear and nonlinear optical antenna and their applications. The ability to tailor the scattering response of nanoantennas using nano- loads has been proved in this research work. It was demonstrated that nonlinear optical antennas are ideal candidates to build all-optical switching devices networks.Optenna (optical antenna) also hold promise for new optoelectronic and quantum information applications. The field of optical nanoantennas, as it holds the potential for unprecedented sub- wavelength light matter interactions, strong coupling between far-field radiation and localized sources at the nanoscale, as well as the exciting possibilities of realizing efficient wireless links between optical nanocircuit components The design principles of optical antennas are based on the same rich physics of the welle stablished research area of nonlinear optics. The work in this promising research field originated in the pioneering experiment of second harmonic generation observed by nonlinear crystals. A several approaches have been explored, and continue to emerge, for coupling the optical properties of metal and dielectric nanoparticles to the behavior of semiconductor photodetectors and photovoltaic devices to improve broadspectrum range .The wavelength-specific applications involving optical liquid absorption in molecules or organic semiconductors, approaches based on exploitation of localized surface plasmon polariton for metal nanoparticles, and associated increase in local field amplitudes, have dominated. In contrast, for devices based on semiconductors, the disparity between the length scales for plasmon-induced field amplitude increases in the vicinity of metal nanoparticles and those for optical absorption in bulk semiconductors suggest that greater emphasis on nanoparticle-induced optical scattering is likely to be most effective

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