

DESIGN AND PERFORMANCE INVESTIGATION OF TUNABLE UWB THZ ANTENNA BASED ON GRAPHENE FRACTAL ARTIFICIAL MAGNETIC CONDUCTOR

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ABSTRACT

In this paper a tunable antenna using graphene-based fractal shape artificial magnetic conductor (AMC) is proposed for ultra-wideband (UWB) terahertz (THz) application. The resonance frequency of the proposed antenna can be tuned by varying the applied DC voltage which leads to variation in chemical potential of graphene. The antenna consists of a bowtie shaped patch mounted on 15x15 graphene patches based on new fractal shape AMC unit. It is observed that the resonance frequency and the bandwidth increase by increasing the applied voltage.

Key words: Graphene, Artificial magnetic conductor, Terahertz antenna

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1. INTRODUCTION

Graphene has been named the simplest complex material. Graphene has drawn attention due to its unique properties and advantages and it is used in many application including electrical, thermal, and mechanical applications [1-3]. The surface conductivity of the graphene can be varied by varying applied electrical voltage [4-6], thus many graphene-based devices such as antennas, filters, absorbers