

Design and analysis of graphene-based terahertz band and nano antenna

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Graphene-enabled wireless communication constitutes a novel paradigm which has been proposed to implement wireless communications at the nanoscale. Indeed, graphene based nano-antennas just a few micrometers in size have been predicted to radiate electromagnetic waves at the terahertz band. In this work, the performance of a graphene-based Nano-patch antenna in transmission and reception is numerically analyzed. The resonance frequency of the nano-antenna is calculated as a function of its length and width, both analytically and by simulation. The influence of the variation in the height of the patch on the return loss is also evaluated. The return loss and the band width of the graphene-based Nano-patch antenna is compared to that of an equivalent metallic antenna. Finally, we do the analysis of the radiation pattern, gain, and smith chart of a graphene-based Nano-patch antenna. These results will prove useful for designers of future graphene-based nano-antennas, which will enable wireless communications at the Nano scale.

Keywords: Graphene, nano-antennas, wireless communications

Biography:

Dr. Sonia Bansal is an Assistant Professor in YMCA University of Science and Technology, Faridabad. Her current research interests include Nanotechnology. She received her PhD Degree from Jamia Millia Islamia, New Delhi and M.Tech degree in Computer Engineering. She has published 14 International paper in International Journals and presented 48 papers in National & International Conferences. She is having more than 12 years teaching and research experience. Dr. Sonia Bansal is member of Materials Research Society of India (MRSI) and senior member of International Association of Computer Science and Information Technology (IACSIT)