|  |  |  |  |
| --- | --- | --- | --- |
| **Title:** | **Graphene based Tera Hertz patch antenna for breast tumor detection** | | |
| **Author(s) Name:** | Lithi Lia, Md. Saniat Rahman Zishan, Sumit Hassan Eshan, Raja Rashidul Hasan | | |
| **Contact Email(s):** | hemal@aiub.edu | | |
| **Published Journal Name:** | Telecommunication Computing Electronics and Control | | |
| **Type of Publication:** | **Journal** | | |
| **Volume:** | 22 | Issue | 5 |
| **Publisher:** | [Universitas Ahmad Dahlan](https://uad.ac.id/en/" \o "UAD" \t "https://telkomnika.uad.ac.id/index.php/TELKOMNIKA/article/view/_blank) | | |
| **Publication Date:** | October, 2024 | | |
| **ISSN:** | [1693-6930](https://telkomnika.uad.ac.id/index.php/TELKOMNIKA/manager/setup/portal.issn.org/resource/ISSN/1693-6930) | | |
| **DOI:** | doi.org/10.12928/TELKOMNIKA.v22i5.26077 | | |
| **URL:** | https://telkomnika.uad.ac.id/index.php/TELKOMNIKA/article/view/26077 | | |
| **Other Related Info.:** |  | | |
|  | | | |

|  |  |
| --- | --- |
| **Abstract:** |  |
| Breast cancer is a potentially life-threatening disease is one of the most common cancers specially for women. For fast and effective treatment early detection of the tumor is very important. But the frequent checkup is not possible for many people with the traditional way of detection due to their cost and availability. To detect the biomedical imaging terahertz (THz) frequency is a suitable range and using patch antenna in biomedical detection is cost effective compared to the traditional methods. So, to detect the early stage of breast tumor, this article has proposed a graphene based THz antenna. The primary goal of this antenna is to detect the breast tumor with the improvement of the performance and the secondary goal is to make the antenna very light weighted. The design of the antenna was done using computer simulation technology (CST) studio and the dimension of the antenna is kept 18×23 μm2 and a breast phantom model has been designed and the performance analysis of the antenna has been done for both free space and breast tissue. The return loss of the antenna in free space is -52.4422 dB at 6.96 THz. The details of the detection of tumor through the proposed patch antenna has been shown in this study. | |