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| **Title:** | **Skin tumor, lipoma and cyst detection by graphene based on-body patch antenna in L band** | | |
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| **Abstract:** |  |
| Body-implanted antennae are a popular and costeffective approach to dragonize sickness promptly. Early detection of a medical condition makes treatment easier and may possibly save the patient's life. The primary purpose of this work is to develop an on-body patch antenna for biotelemetry. The largest organ is the skin, which covers the whole surface of the body. Skin problems have become more frequent all over the world in recent years. Nobody has ever lived a life without facing difficulty. The primary purpose of this study is to detect skin cysts, lipomas, and malignancies by identifying the S1,1 parameter of a microstrip patch antenna using cutting-edge materials such as graphene. Graphene is a recently discovered material with extremely high electrical conductivity and resistance. To achieve this, an on-body microstrip patch antenna was built utilizing four different types of skin disease models: normal skin, tumor-affected skin, lipoma-affected skin, and cyst-affected skin. The skin disease detection antenna was developed in the L-band (1.18 GHz). The antenna and four skin phantom models in the CST Studio Suite have been used to provide a range of outputs, including return loss, voltage standing wave ratio, far-field, and directivity. Return loss was found to be −33.3908 dB for a skin tumor, −33.3915 dB for skin lipoma, and −33.3876 for a skin cyst, compared to −33.3993 dB for normal skin. This antenna has a Specific Absorption Rate of 1.42 W/kg, making it bio compactable. | |