Microstrip Antenna on Kapton Substrate for Strain Sensing Applications

Elizabeth Rufus

Middle East College, PC124, Knowledge Oasis Muscat, Sultanate of Oman

elizabeth@gmail.com

***Abstract*— In this paper the feasibility of using a circular microstrip patch antenna fabricated on flexible kapton substrate to measure strain is investigated by performing a preliminary laboratory experiment. When a patch antenna is deformed, the dimensions of the antenna changes and hence the resonant frequency of the antenna changes which is taken to be an indication of change in the strain applied. A circular microstrip patch antenna on a flexible kapton substrate operating at 4.618 GHz has been designed based on the relation between the radius of the circular patch and its resonant frequency. The resonant frequency of the microstrip patch antenna decreases linearly with the increase in the applied strain. The shift in the resonant frequency is nearly 3 MHz when the stain is 0.18%. This microstrip circular patch antenna can be used with other components easily and can be very useful in biomedical applications and in structural health monitoring.**

Keyword— **Microstrip, dielectric, kapton, antenna, resonant frequency**

Dr. Elizabeth Rufus received the degree in electronics and communication engineering from Madras University, in 1991.She received the Ph.D. degree in electronics from the VIT University in 2010. Currently, she is an Assistant Professor at Middle East College, Knowledge Oasis Muscat, Oman. Her interests are in antenna design, simulation and fabrication.