CHAPTER VI

CONCLUSION AND FUTURE SCOPE

6.1 CONCLUSION

The aim of the thesis titled Eco-Friendly Low-Profile Antenna for High Frequency Applications was to investigate the design requirements of compact planar biodegradable antennas for wide band applications. Two types of antennas belonging to this class were identified: monopole and inverted-F antennas and the same was designed.

The evolution of the designed antenna was investigated in detail to have an insight into their wideband behavior. The studies reveal that the key to a broadband antenna performance lies in having a smooth transition from the feed to the ground edges. On observing the geometry of the antenna that is designed in this thesis, it is clear that abrupt discontinuities in their geometry, especially near the feed-radiator transitions, have been avoided. As a consequence, the impedance change from one resonance mode to the other is minimized, resulting in wideband performance of the antenna.

When the antenna is built on a portable device, the impact from human body may also be considered. UWB systems operate at extremely low power level which limits its transmission range. In order to enhance the quality of the wireless communication link and to improve the range, directional antennas with high gain are required. Also element spacing should be considered while designing a UWB system of wideband arrays.

In the first phase an inverted-F monopole antenna is designed which can be used for higher frequency applications. It has a good aesthetic appearance and its operating frequency is 825.5 MHz. This, when compared with another inverted-F sputtered antenna having a peak efficiency of 18%, it was found that the currently developed antenna has a peak efficiency of 25.5%.

The sintered antenna developed in the second phase is monopole and is having a frequency of 900 MHz. This antenna is ecofriendly and biodegradable.
In the third phase a sintered dipole biodegradable antenna in the frequency of 850 MHz is developed and its characteristics are observed. With this technique, a normal angle of 80° is obtained. It shows better performance when compared to other nanoparticle antennas. The operating frequency range of this antenna is from 2 MHz to 10 GHz.

This research paves the way to fabricate the next generation low cost, biodegradable, eco-friendly antennas.
6.2 FUTURE SCOPE

The sputtering material used is not highly adherable, so to improve adherability alternate materials like silk can be used.

The gain can be improved by identifying materials that are having suitable dielectric constant as required by the applications.

In future, even the clothes one wears may act as antenna and it will give greater security to humans.