

Fabrication of Wearable Antennas through Thermal Deposition

Authors : Jeff Letcher, Dennis Tierney, Haider Raad

Abstract : Antennas are devices for transmitting and/or receiving signals which make them a necessary component of any wireless system. In this paper, a thermal deposition technique is utilized as a method to fabricate antenna structures on substrates. Thin-film deposition is achieved by evaporating a source material (metals in our case) in a vacuum which allows vapor particles to travel directly to the target substrate which is encased with a mask that outlines the desired structure. The material then condenses back to solid state. This method is used in comparison to screen printing, chemical etching, and ink jet printing to indicate advantages and disadvantages to the method. The antenna created undergoes various testing of frequency ranges, conductivity, and a series of flexing to indicate the effectiveness of the thermal deposition technique. A single band antenna that is operated at 2.45 GHz intended for wearable and flexible applications was successfully fabricated through this method and tested. It is concluded that thermal deposition presents a feasible technique of producing such antennas.

Keywords : thermal deposition, wearable antennas, bluetooth technology, flexible electronics

Conference Title : ICWCC 2017 : International Conference on Wearable Computers and Computing

Conference Location : Barcelona, Spain

Conference Dates : February 26-27, 2017