

**STRUCTURAL CHARACTERIZATION OF  
SILVER NANOWIRES (AgNWs) POLYMERIC  
FILM FOR FLEXIBLE WEARABLE ANTENNA**

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## AUTHOR'S DECLARATION

I declare that the work in the thesis was carried out in accordance with the regulation of Universiti Teknologi MARA. It is original and is the results of my own, unless otherwise indicated or acknowledge as reference work.

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## ABSTRACT

AgNWs transparent electrodes have recently been chosen as alternative conductor for application in various electronic device. The fabrication of AgNWs on PDMS elastromic substrate with sheet resistance below than  $10 \Omega$  for flexible wearable antenna is demonstrated. The structural properties of AgNWs polymeric film are discussed to concern about its suitability for use in flexible antenna devices. This kind of flexible antenna is prepared by embedded the AgNWs onto the surface of PDMS elastromic substrate via casting method. FTIR and SEM analysis shown that AgNWs reliably transfered onto the surface of elastromic substrate which then acted as conductive radiating element for the antenna device. Uniform average porosity of film indicated the formation of sponge like porous structure on the film surface which is highly recommended for the catchment area of AgNWs. Antennas formed from the straight AgNWs exhibit -18dB return loss with frequency of 2.725 GHz. Such findings demonstrated the potential of this AgNWs polymeric film in applications of wireless communications for wearable system.