



Applications of Intrinsic Conducting Polymer for Wi-Fi Electromagnetic radiation Environment Pollution Reduction

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ABSTRACT

The rapid increase in the operating frequency that is used in Wi-Fi devices and mobile phones systems to GHz region poses health and environmental hazards. This increase in the operating frequency will increase the danger of the electromagnetic radiation that is emitted by devices that are operating in the Wi-Fi frequency of 2.5 GHz. Current materials that are used in the mobile phone at that region of frequency have more tendency to reflect the electromagnetic radiation rather than absorbing it. The current materials like (Aluminium, Copper, Carbon nanocomposites) that are used in the industry carry from large weight and have a tendency to rust or are difficult to dispose of. The current metal composites cannot be made into thin layers of coating on the devices to shape the radiation of the WI-FI and mobile phone.

In this research the Intrinsic Conducting Polymers (ICP) is a pure polymer material with great potential applications to replace metals, and carbon composites materials to reduce pollution. In this research different ICP materials were used to investigate the reduction of Electromagnetic Radiations (EMR). The choice of ICP materials that were used for this investigation were Polyaniline (Salt) (PAni), Polypyrrole (PPy) and poly(3,4-ethylenedioxythiophene) poly(styrenesulfonate) (PEDOT:PSS). The ICP materials EMR were experimentally compared in an open air laboratory with common metals like Aluminium and Copper materials and micro-composite Carbon materials. Initial results show that those ICP materials can offer a replacement to the electromagnetic shielding in Wi-Fi frequency and beyond.