

NOVEL BIO-ELECTRODE FOR HUMAN BODY SIGNAL DETECTION

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ABSTRACT

The current paradigm in healthcare is the notion of continuous remote patient monitoring using a network of wireless sensors. These healthcare sensor network systems, consisting of human body area networks (HBAN) and infrastructure area networks avoid the need for a manual self-administered health system and may enable users to take control of their health disorders in future. HBAN technology envisions miniaturized sensors worn or implanted on the body, continuously monitoring health parameters and acting to prevent the onset of critical health events. For example, diabetics now have access to an automatic insulin pump which monitors glucose levels and administers insulin when glucose levels are high. Similar technologies will one day result in devices which can minimize incidences of heart attack or stroke. They could prevent frequent hospital visits and save costs for both the individual patient and a nation's healthcare system. Radio frequency (RF) wireless technology has been successfully deployed in most HBAN implementations; they consume a lot of battery power, susceptible to electromagnetic interference (EMI) and have security issues. The key issue with RF propagation in portable devices is that it consumes battery life quickly. For example zigbee has the maximum data rate of 250 kb/s at 26.5mW resulting in 106nJ per received bit but IBC consumes an order of magnitude less energy at data rates up to 10Mb/s which makes it an attractive communication method for HBAN applications.

KEYWORDS: *Wireless, Healthcare, Radio Frequency, Human Body, Networks, Security*

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