Energy storage and harvesting for Smart Wearable Electronics

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In recent years, wearable devices have attracted the attention of many research group and industrial partner because of their peculiar characteristics to enhance the quality of life. It is possible to employ this technology to facilitate real-time monitoring of patients' vital signal developing new concepts of sensors-based technology for the detection of biometric information, integrating of all electronic building blocks (sensors driving and conditioning circuits, circuits for analog and digital backscatter modulation) and flexible RF rectifiers, solar cells, batteries to be embedded in the RFID sensor/transponder. Most wearable devices are based only on batteries and when the energy stored in the device is depleted, the operation of wearable devices is compromised. To overcome this limitation, efficient energy harvesters for wearable devices are crucial. We reported the realization of paper-based supercapacitors and polymeric solar cells for the development of wearable paper-based technology, that can be integrated into an all-in-one system to power sensing and communication functionalities for health care applications.

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