

Towards Batteryless IoT Sensors

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The internet of things (IoT) has recently drawn much attention from industrial and academic societies, since many believe the related technologies could revolutionize the current faces of mobile devices, communication, biotech and healthcare, etc. These IoT technologies in fact relies on new sensors, fast networking, smart big-data analysis and massive cloud storage. For example, towards long-time monitoring of bio-signals at home, the sensors with wearability in small-form factors, light weights, low-power and wireless transmissibility are required to work with a personal cloud to store long-time bio-data and perform big-data analysis, then would be able to conduct preliminary diagnosis and issue early warning. For wearable and low-power sensors, a technology platform of batteryless IoT sensors developed by Sensors IC Lab at NCTU, Taiwan is presented in this talk. The technologies in this platform include (1) high-efficiency PV panels to harvest indoor light; (2) a high-efficiency charge pump circuit with maximum point tracking (MPPT); (3) a low-power visible light communication (VLC) circuit; (4) a batteryless IoT tag; (5) an optical sensor for blood flow and BP. In short, the platform aims to serve as the model to develop key technologies of batteryless IoT sensors that would lead to a new phase of IoT sensors.