



## **RF Energy Harvesting for Internet of Things (IoT) Applications**

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The RF energy harvesting is a “Green” self-sustainable operation which can potentially provide unlimited energy supply that can be used to remotely power up low power devices. In particular, it helps to eliminate the need for a battery, which not only increases the cost, weight, and size of the device but the battery replacement is also costly and time-consuming especially when a lot of devices are spread over wide or inaccessible areas. Furthermore, it improves the reliability, portability, and user and environment friendliness and reduces the size and cost of the device. In addition, the finite lifetime of the electrical batteries is encouraging the researchers to explore further solutions in the field of RF energy harvesting, as acknowledged by Nikola Tesla, who described the freedom to transfer energy between two points without the need for a physical connection to a power source as an “all-surpassing importance to man”.

This talk will present an introduction to wireless power transfer (WPT) followed by a comparison between ambient energy sources and an overview of different components of rectennas that are used for RF energy harvesting. Being less costly and environment friendly, rectennas are used to provide potentially inexhaustible energy for powering up low IoT power sensors and portable devices that are installed in inaccessible areas where frequent battery replacement is difficult, if not impossible.

The talk will also describe various stages of rectenna system including multiband/broadband antenna, matching network and rectifier. The current challenges in rectenna design & development and output power limitations will also be presented.