# Inductive coupling energy harvesting for wireless circuits

**Bluetooth low energy (BLE) and some proprietary wireless protocols are optimized for low power, due to their low duty cycle of operation. Low power radios may have an average current consumption in the microampere range and are usually powered by small batteries. By using energy harvesting we can remove the battery or extend the battery life of these devices.**

Energy harvesting is energy scavenging from ambient sources such as light, vibration, thermal. Inductive coupling is another possible source of energy, where the electromagnetic field is created between two coils. Inductive coupling is used in some electronic devices such as wireless charger (A4WP, QI).

Inductive coupled energy harvesting devices convert electromagnetic energy into DC power, and typically consist of antenna coil, voltage rectifier, converter, storage (such as battery or super capacitor) and charging controller circuit.

The primary work of this master project will focus on analyze, design and implementation of a low power energy harvesting system. The project will be divided into few phases, and student will  investigate how to collect energy from inductive coupling, how to convert and store the harvested energy. Also student will study the efficiency of energy transferring between two coils, and finally will implement the chosen architecture in CMOS, and perform tests in order to verify the concept of inductive coupling energy harvesting.

[Malihe Zarre Dooghabadi](mailto:malihe.dooghabadi@nordicsemi.no)

[malihe.dooghabadi@nordicsemi.no](mailto:malihe.dooghabadi@nordicsemi.no)

Nordic Semiconductor ASA , P.O. Box 436, Skøyen

Tor Sverre Lande

bassen@ifi.uio.no

Nanoelektronikk, 5. etg, Ole Johan Dahls Hus, Gaustadalléen 23b

+47-22852455