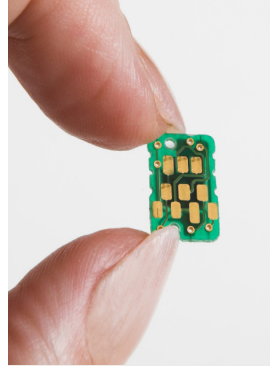




TECHNOLOGY OPPORTUNITY



Miniaturized Low Power FGMOSFET Radiation Sensor

Ultra low-power, highly sensitive sensor using standard CMOS process

Radiation dosimeters are used to detect and measure radiation exposure. They can be used in a number of applications. In healthcare settings, they are used to detect patient and health worker levels of exposure to radiation. They can also be used to detect radiation exposure levels of workers in nuclear power plants and other workplaces where exposure to radiation is possible. Typical dosimeters use wired connections to transmit measured readings. Passive dosimeters only record radiation exposure, and the actual measurement is only known after the dosimeter undergoes some additional processing steps. Thus, passive dosimeters cannot provide real-time warning of dangerous radiation exposure levels.

Benefits

- ▲ Miniaturized size permits use in many applications
- ▲ Low voltage operation minimizes power consumption and enables integration with other electronics
- ▲ Wireless transceiver eliminates the need for wires
- ▲ High sensitivity can be achieved

Applications

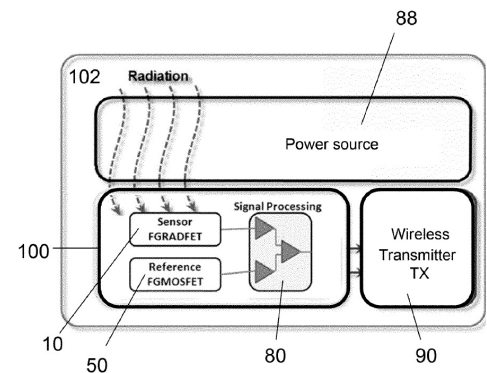
- ▲ Healthcare
- ▲ Emergency response
- ▲ Nuclear safety
- ▲ Defense and space

Technology Details

KAUST's novel active dosimeter operates at very low voltage to minimize power consumption, while at the same time maintaining high sensitivity. It uses floating gate transistors in a novel and unique design to enable this, while at the same time being fabricated in standard CMOS processes to minimize costs and enable integration with other electronics. A wireless transceiver can be integrated with the dosimeter to enable remote activation and reading of the sensed radiation value. The dosimeter has potential applications in healthcare, emergency response, nuclear, defense and space applications.

How It Works

The unique design of this dosimeter integrates a wireless transceiver to minimize the overall size of the wireless dosimeter. The dosimeter uses Floating Gate Metal Oxide Semiconductor Field Effect Transistor (FGMOSFET) in a novel design to greatly increase sensitivity of the sensor. The sensor is also able to compensate for temperature and environmental variations, ensuring accuracy and reliability. The design can be fabricated using CMOS processes, which facilitates integration of the radiation sensor with signal processing and transceiver electronics. A wireless transceiver can be integrated with the dosimeter to enable remote activation and reading of the sensed radiation value.



Why It Is Better

These features make this novel dosimeter ideal to use in healthcare, workplace safety, defense, space and other applications. The high sensitivity of the device is important, but the range of sensitivity can also be optimized to suit any application. Its miniaturized size and low power consumption make it ideal as a wearable sensor. Furthermore, as an active dosimeter it can provide real-time radiation level readings. The wireless capability of the transceiver eliminates the need for wires, improving the usability of the device in various applications.

IP Protection

KAUST has an issued patent 8,519,345 for this technology.

Opportunity

This technology is part of KAUST's technology commercialization program that seeks to stimulate development and commercial use of KAUST-developed technologies.

Opportunities exist for joint development, patent licensing, or other mutually beneficial relationships.

For More Information

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