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(I) Enabling New Biophotonics Technologies Development with Silicon Photomultiplier Detectors

Wednesday 21 June 2023 10:30 (30 minutes)

Silicon photomultiplier (SiPM) detectors operated in Geiger mode are recently enabling a wide variety of biophotonics applications due to several advantageous features over traditional photomultiplier tubes. Silicon photomultiplier technology combines highly sensitive photon counting with miniaturized packaging, providing portability, low voltage operation, immunity to magnetic field interference, and low-cost detection. We will discuss our recent advancements in the design, development and opto-electronic characterization of these portable, sensitive, time-resolved biosensors, capable of capturing very low intensity light emissions from biological specimens. Integrating these solid-state single-photon avalanche diode array detectors, we will present a range of promising new biophotonic probes developed in our lab, from analyzing plant photosynthetic disruption of delayed fluorescence due to environmental stress exposure, to high speed pump-probe devices to interrogate the molecular micro-environment of cancer useful in understanding tumorigenesis and evaluation of new cancer therapies.

Keyword-1

biophotonics devices

Keyword-2

SiPM detectors

Keyword-3

pump-probe experiments

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