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SENSITIVITY OF STANDARD AND STACKED RADFET DOSIMETERS

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Radiation Sensing Field Effect Transistors (RADFETs), also known as MOSFET dosimeters, are discrete p-channel MOSFETs with the gate oxide engineered for increased radiation sensitivity. RADFETs are small, require very little or no power during operation, read-out is simple and non-destructive, and their electronic signal is suitable for integration with the electronics systems. For these reasons RADFETs have found applications in quality assurance of radiotherapy, dose monitoring in high energy physics laboratories, accidental personal dosimetry, and space. Lower dose applications, such as e.g. occupational personal dosimetry and radiology, are currently out of reach owing to inherent sensitivity limits of the standard RADFET technology.

Tyndall National Institute has been involved in RADFET research and development, fabrication, and commercialisation for several decades and has acquired significant experience in the technology and applications. This paper presents Tyndall recent efforts in RADFET manufacturing and characterisation for different applications and discusses possible approaches towards increased sensitivity of the technology, including standard and stacked RADFETs.