**Purpose:** MOSFET dosimeters are attractive dosimeters for a number of applications in diagnostic radiology due primarily to their small size and the ability to rapidly read the resulting x-ray dose. It is important to understand the characteristics of these unique dosimeters in order to accurately interpret the output and successful predict patient dose.
**Methods:** The characteristics of MOSFET dosimeters have been evaluated for a variety of diagnostic radiology applications. Specific tests were designed to evaluate important MOSFET responses over the x-ray energy range of interest (20-150 keV). Responses of these devices have been characterized for energy response, angular dependence, temperature, fading, dose linearity and sensitivity.
**Results**: MOSFET dosimeters are available in configurations having differing physical geometry, sizes, sensitivity and absorbed dose limited usefulness. These dosimeters typically exhibit good angular response around their longitudinal axis and the variation of response as a function of ambient temperature is small. Some of the parameters that need to be carefully considered include the variation in energy response and sensitivity limits inherent to MOSFET dosimeters. These dosimeters require an accurate calibration exposure (or dose) to mV calibration for the energy source corresponding to the intended application. For example, a separate calibration needs to be developed for mammography applications for different accelerating potential and target/filter combinations. The overall sensitivity of these dosimeters can be a limitation for accurate dose assessment at clinical exposure levels. Examples of MOSFET applications for clinical dosimetry, when integrated with anthropomorphic phantoms are presented for mammography, radiography and computed tomography examples.
**Conclusions** : MOSFET dosimeters can provide a convenient dosimetry tool capable of simultaneous measurement for multiple dosimetry points, usually up to twenty individual locations. Careful energy calibration is essential to accurate dosimetry interpretation and care should be exercised to ensure that exposures are large enough to provide consistent radiation measurement.