

DOSE CORRELATION OF A MOSFET DOSIMETER FOR IN-VIVO SKIN
DOSIMETRY IN DYNAMIC AND OMNI WEDGED 6MV/18 MV PHOTON BEAMS
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A MOSFET is an excellent dosimeter for in-vivo skin dose determination, but the dosimeter's responses are unknown in dynamic or Omni wedged beams and are here measured and evaluated.

MOSFET dose responses were measured in 6/18 MV beams filtered by 15-60 degree dynamic compared to static Omni wedges and rising oblique incident beams. A solid water phantom was irradiated at various SSD, beam sizes and off-axis distances using a Varian 2100CD and an Elekta SL-20 accelerators. MOSFET readings were correlated to skin doses from a parallel plate chamber.

Results showed MOSFET dose responses were within 2% of the chamber dose in normal incident beams using metal wedges, and within 3-4% using low angle dynamic wedges. In highly modulated wedges (60°), the correlation dropped to 5-6%. MOSFET dose responses appeared linear rather than in inverse squared relations with SSD. Great beam obliquity produced correlation deviations of 5-10%. Skin points at off-axis in oblique beams had largest deviations of 15% for points lying in the open STT modulation segment.

The present skin dose study shows that MOSFET is a dosimeter suitable for in-vivo dosimetry in dynamic as well as universal wedge photon beams. But specific dose-response calibration of the MOSFET should be made when using large angle oblique incident beams or highly modulated dynamic wedges.