

Abstract Submitted
for the OSS16 Meeting of
The American Physical Society

Effects of low-dose high-energy photon irradiation on UHMWPE films NENAD STOJILOVIC, University of Wisconsin Oshkosh, SASA DORDEVIC, The University of Akron, STRAHINJA STOJADINOVIC, University of Texas Southwestern Medical Center — Irradiation of biocompatible polymers is generally performed using high-dose gamma radiation, typically in kGy-to-MGy range. In this study, ultra high molecular weight polyethylene (UHMWPE) films have been exposed to relatively low dose (30, 60, and 120 Gy) radiation, utilizing 6 MeV clinical linear accelerator X-Rays. The impacts of irradiation were compared with the pristine UHMWPE films. The effects of low-dose 6 MeV photon irradiation were investigated using X-Ray Diffraction method, Fourier Transform Infrared, Ultraviolet-visible and Fluorescence spectroscopy. We discuss radiation-induced changes in the optical properties and interplanar spacing, and propose mechanisms responsible for the observed changes.

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Date submitted: 18 Mar 2016

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