Abstract

Radiation damages the cell by damaging DNA molecules directly through ionizing effects on DNA molecules or indirectly through free radical formation. A lower dose delivered through a long period of time theoretically allows the body the opportunity to repair itself. Radiation damage may not cause any outward signs of injury in the short term; effects may appear much later in life. The **COLTRIMS** reaction microscope with high momentum resolution and high multi-coincidence efficiency has been utilized to study the collisions of low energetic radiation with atoms. The design of **COLTRIMS** reaction microscope as well as the radiation beamline will be discussed. One of the most important factors for the design is the high photon flux required for the various medical applications. This can be achieved through the combination of the storage ring and a superconducting multipole wiggler. Special windows and apertures, mirrors and monochromators are also required to produce beam with high cross-sectional uniformity. A description of the design features of the beamline as well as the insertion device will be discussed