DEVELOPMENT OF A BLUE LIGHT RADIATION DOSIMETER

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**Purpose of study:**

The adverse effects to ocular health caused by exposure to high levels of optical radiation (100 nm to 1 mm) are of great concern and can result in the severe degradation of vision capabilities. When radiation of sufficient intensity in the blue part of the electromagnetic spectrum (effectively 380 to 550 nm) reaches the retina, it is found to trigger a reaction in the eye and is characterized by the blue light hazard. This blue light photochemical injury to the human retina can result from either viewing an extremely bright light source for a short amount of time or a less bright source for a longer period of time. Excessive exposure to harmful blue light radiation is linked to the increased risk of macular degeneration in humans. Therefore, it is essential to decrease any exposure to damaging optical radiation that the population experiences. Quantification of the individual level of radiation exposure requires personal dosimetry that takes into account changes in the position and orientation of people compared to the light sources.

**Conclusions:**

Currently, a prototype dosimeter is being developed that can be used for the measurement of blue light exposures to humans. The prototype dosimeter only responds to wavelengths associated with the blue light hazard and is expected to be a useful tool for measuring radiation associated with the blue light hazard. The dosimeter will address the current major gap in the scientific knowledge on the amount of blue light radiation humans are exposed to during daily activities.

**Category:**
Innovation from Basic Research

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