

Thin Film Dosimeter for the Assessment of UVA Exposures to Humans

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ABSTRACT

A thin film dosimeter for the assessment of UVA (320-400 nm) exposures to humans will be reported. The UVA dosimeter is based on phenothiazine in thin film form that is filtered by a thin film of mylar to absorb the UVB wavelengths. The pre- and post-exposure spectral optical absorbance was investigated in order to determine the wavelength of 370 nm as a suitable wavelength for the quantification of the physical change for the measurement of the UVA exposures. This change in optical absorbance at 370 nm (ΔA_{370}) was employed to calibrate the dosimeter for UVA exposures. The dosimeter starts to saturate for a ΔA_{370} of approximately 0.3. This relates to solar UVA exposures at a sub-tropical site on a horizontal plane of approximately three to four hours. The size and lightweight properties of the dosimeter means that it can be attached to different anatomical sites on humans for the assessment of UVA exposures to humans during normal daily activities.