

## **ATTENUATION OF SOLAR RADIATION BY WATER MIST FROM THE ULTRAVIOLET TO THE INFRARED RANGE**

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**ABSTRACT.** A model is developed for the hemispherical transmittance of direct and scattered solar radiation from a cloudless atmosphere by a mist layer of water droplets in order to investigate the potential of water misting systems to serve as a protection from solar irradiation with the emphasis on harmful UV radiation. The proposed model is based on published spectral experimental data for solar irradiation, Mie theory for interaction of the radiation with single spherical droplets, and radiative transfer theory. The known limiting solutions are employed to simplify the Mie calculations. The modified two-flux approximation is used to account for both direct and diffuse irradiation in lieu of a numerical solution for the full radiative transfer equation in anisotropically scattering media. The role of the governing parameters of a disperse water curtain of water droplets, water content, and droplet size for sample conditions is studied in some detail, particularly in the near-ultraviolet part of the spectrum where radiation can result in human tissue damage.