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Optical Properties of Human Cancer and Normal Cells CHRISTOPHER SANDER, NAN SUN, JEFFREY JOHNSON, SHARON STACK, CAROL TANNER, STEVEN RUGGIERO, University of Notre Dame — We have investigated the optical properties of human oral and ovarian cancer and normal cells. Specifically, we have measured the absolute optical extinction for both whole cells and intra-cellular material in aqueous suspension. Measurements were conducted over a wavelength range of 250 to 1000nm with 1 nm resolution using Light Transmission Spectroscopy (LTS). This provides both the absolute extinction of materials under study and, with Mie inversion, the absolute number of particles of a given diameter as a function of diameter in the range of 1 to 3000 nm. Our preliminary studies show significant differences in both the extinction and particle size distributions associated with cancer versus normal cells, which appear to be correlated with differences in the particle size distribution in the range of $\sim$ 50 to 250 nm.

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