

Abstract Submitted
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Optical and Nanoparticle Analysis of Normal and Cancer Cells by Light Transmission Spectroscopy¹ ALISON DEATSCH, NAN SUN, JEFFERY JOHNSON, SHARON STACK, University of Notre Dame, JOHN SZAJKO, F Cubed LLC, CHRISTOPHER SANDER, ROLAND REBUYON, University of Notre Dame, JUDAH EASTON, Ivy Tech Community College, 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 intra-cellular material (lysates) in aqueous suspension. Measurements were conducted over a wavelength range of 250 to 1000 nm 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 approximately 50 to 250 nm. Especially significant is a clearly higher density of particles at about 100 nm and smaller for normal cells.

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