

Optical Properties of Breast Cancer Cells

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We have been investigating various physical properties of biological cancer cells, such as mechanical properties, optical properties, thermal properties, and electrical properties, in the last few years in an effort to develop physical property based cancer diagnostic technologies. In this paper we are presenting our initial results on the several optical properties of human breast cancer cell lines MCF7 and MDA-MB231, where the MCF7 cells are weakly invasive and MDA-MB231 highly invasive. The optical properties of cancer cells measured with various techniques, such as full field OCT, polarization based phase dependent microscope, IR and UV absorption, and femtosecond laser will be compared with those of the normal breast cells, MCF10A. All the measurements were carried out on live cells in liquid culture media.