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Laser spectroscopic applications in cancer nanotechnology

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In recent years, several techniques have been applied since the "war on cancer" was pronounced. Advanced laser spectroscopic methods for creating and controlling specific nanoparticles have been performed to treat and diagnose cancer cells. Numerous laser based spectroscopic methods have been applied to identify breast cancer like; Laser-induced fluorescence, laser Raman scattering and laser photoacoustic spectroscopy. Aside from individual differences that result in normal variations in lipids and glycogen, a clear distinction between normal and malignant tissues can be observed. The obtained absorption spectra were observed using FTIR-Raman Spectrometer technique from different samples of breast tumors with normal spectra reveals very important features that can be applied as diagnostic techniques. The results of the applied methods are comparable with the conventional techniques like biopsy etc. Laser irradiation methods were applied to sensitize and control nanoparticles propertied which are needed for treatment of cancers. The observed results will be used to improve the prospective methods to study how nanoparticles can be used as molecular imaging agents to detect and monitor cancer progression in future.

Recent Publications

References

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Biography

Walid Tawfik, is Egyptian associate Professor, in laser spectroscopy and ultrafast lasers at the National Institute of Laser (NILES), Cairo University, Cairo, Egypt. In 1994 he joined NILES as staff member and promoted as assistant lecturer, assistant professor and associate Professor in 1996, 2000 and 2008, respectively. He has received the BSC, Master and PhD degrees in physics, laser physics and laser spectroscopy in 1992, 1996, 2000, respectively, from Cairo University, Egypt. He is interested in the field of ultrafast lasers and ultrafast phenomenon.

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