



LORENZO LEONARDI 'Biomedical vibrational spectroscopy'

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Seminar, March 11th, 17:00. Seminar Room

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CANADA

Metabolic, physiological, or structural changes in tissue are of primary concern in many clinical and biomedical domains. Biochemical or physiological changes in the body are usually accompanied by medical problems. The challenge for biomedical research is to

detect changes at an earlier stage so that therapeutic interventions may have the greatest impact on the disease or problem. Biomedical Vibrational Spectroscopy offers the ability to resolve biochemical information in order to provide prognostic and diagnostics clinical information. The use of biomedical vibrational spectroscopy has a potentially profound impact in a wide diversity of medical applications. The relatively low cost of the technology, its portability and the rapidity of measurements makes it well suited to in-vivo and ex-vivo applications that involve patient screening or monitoring as well as emergency or intra-operative assessment. The extensive and expanding arsenal of solid state laser systems, array detectors, and the variety of electro-optical devices as well as the advanced optical fiber technologies compatible with these systems make biomedical vibrational spectroscopy technically feasible. This presentation is intended to highlight the current capabilities of selected biomedical vibrational techniques such as clinical Near Infrared spectroscopy, Fluorescence imaging, Optical Coherence Tomography, and Raman Spectroscopy with some speculation on future developments and applications.

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