

PS-OCT Birrefringence Measurements

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The recent advances in imaging technologies in life sciences performed a revolution in the way that diagnoses are done. Real time, painless, and non invasive methods are always desired by physicians, biologists, veterinarians and all of these demands are fulfilled by Optical Coherence Tomography (OCT), a technique based on low coherence interferometry that can deliver the samples scattering profile images, similar to the histological analysis. The evolution of OCT features have being massive in the last two decades, and allowed to also analyze others light properties that can be correlated to samples attributes, for example, collagen or tendon induces birefringence, and the birefringence intensity or variation can indicate the health conditions of a tissue, in this way a Polarization Sensitive OCT (PS-OCT) system can provide useful data. The Center for Lasers and Applications (CLA) of Nuclear and Energy Research Institute, IPEN - CNEN/SP is developing a open air Frequency Domain PS-OCT, using a commercial Ti:Sapphire laser (Coherent) and a CCD based spectrometer (Princeton Instruments). The signal treatment was done with homemade software in LabVIEW environment. In this study inorganic samples were used due to it easiness of handling. The system could determine the birefringence ratio of these samples, and their parameters are in agreement with references and other measurements systems.