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Title:Detection of colon cancer by terahertz techniques

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Abstract:Human normal and cancer affected samples of colon tissue have been measured using transmission time-domain terahertz spectroscopy and continuous wave terahertz imaging. We show that it is possible to distinguish between normal and cancerous regions in the samples when they are fixed in formalin or embedded in paraffin. The still noticeable contrast in the dried paraffin-embedded tissues could indicate that there are additional contrast-contributing factors other than water, which is the main goal of the present work. Plots of the refractive index of normal and cancer affected tissues as well as 2-D transmission THz images are shown. Experimental results are presented and the conditions for discrimination between normal and affected formalin-fixed and paraffin-embedded tissue are discussed.

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