

# Combined Raman Spectroscopy- Optical Coherence Tomography System

## Summary

Vanderbilt researchers have developed an optical system for the differentiation of normal and cancerous skin lesions. The system combines the diagnostic prowess of two separate techniques to provide non-invasive, real-time, in-situ evaluation of lesions.

## Addressed Need

- » Existing technique requires invasive and painful tissue biopsy followed by time-consuming histopathological analysis
- » A tumor margin determination device does not exist in the marketplace
- » The two techniques used individually do not provide sufficient information to diagnose skin lesions

## Technology Description

The present technology combines two proven methods, Raman spectroscopy and optical coherence tomography, to provide both real-time biochemical information and tissue structure data, thus obviating the limitations of each technique when used independently. Raman spectroscopy is an optical technique that probes the specific molecular content of a sample by collecting in-elastically scattered light. Optical coherence tomography is a recently developed imaging modality capable of generating depth-resolved images of tissue micro-structure. The combination of these two techniques provides the requisite information to allow definitive differentiation between tumorous and healthy tissue in a non-invasive manner.

## Competitive Advantages

- » Combines biochemical data from Raman spectroscopy with tissue structure information from optical coherence tomography
- » Provides real-time diagnostic information to the practitioner
- » Reduces the frequency of invasive biopsies by identifying benign tumors
- » Available for in-office diagnoses
- » Can be developed into an image-based diagnosis system

## Intellectual Property Status

- » US Utility Patent [7,508,524](#) has been issued
- » Vanderbilt Inventor Bio: Dr. Anita Mahadevan-Jansen: <http://engineering.vanderbilt.edu/bio/anita-mahadevan-jansen>
- » Link to Lab Webpage and Publications: <http://research.vuse.vanderbilt.edu/bmeoptics/index.htm>

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Link to Vanderbilt technologies  
available for licensing

