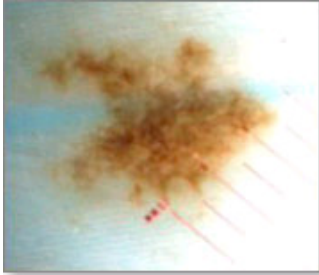


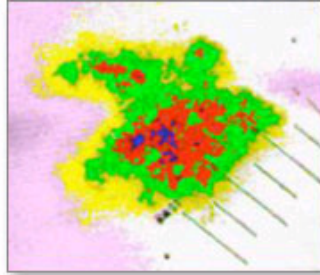
Customer Application: Early skin cancer detection

Sample Type: Human skin

Captured Images:

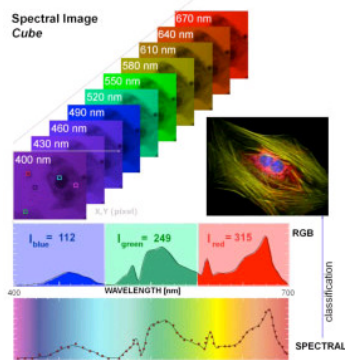


a) standard skin image



b) hyperspectral imaging and categorization using OneLight illumination

Techniques/Settings used: Spectral Imaging for sensitive categorization



Spectral imaging allows finding objects or characteristics unseen by the human eye. Hyperspectral systems collect information as a set of 'images'. Each image represents a range of the electromagnetic spectrum and is also known as a spectral band. Bands can be either illuminated or filtered at the detector. These 'images' are then combined and form a three dimensional hyperspectral cube for processing and analysis. Often a computational image is derived accenting specific characteristics.

Improvement over conventional systems: Hyperspectral imaging requires selectively extracting spectral images. Conventionally this is done either with standard illumination and spectral imaging cameras, sequencing discrete sources (LEDs), or filters, either tunable (AOTF, LCTF) or fixed. The precision control, versatility and speed enabled by OneLight beats these alternatives. Spectral imaging cameras are typically slower and low resolution scans not ideal for live patients – OneLight can scan up to 3500 bands/s. Discrete sources have inadequate band coverage for high sensitivity measurements – OneLight is fully covers bands over visible and NIR. Tunable filters have low power transmission, limited intensity control and are not fully spectrally programmable – OneLight precision control enables finetuning of spectra, intensity and exposure for maximizing system sensitivity.

Utility of OneLight to the Customer:

A spectral imaging workstation was completed incorporating OneLight as the core enabling illumination system. The ease of programmability allowed the application integration to be completed in weeks, and clinical trials started in fall 2010.

Significance of the proven technique to life sciences:

Extended diagnostic tools for reliable, early detection of disease, or enhanced characterization of analytes, or for enhanced real time surgical visualization.

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