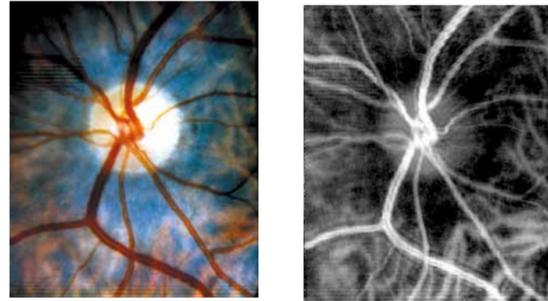


Ophthalmology - Identifying Oxygen Saturation

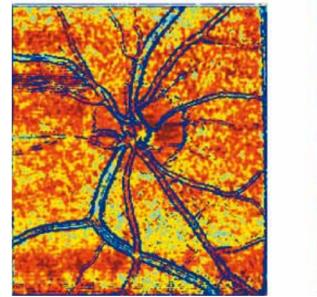
Absorption of blood changes due to the amount of oxygen in the blood. The difference in the spectra of oxygenated and deoxygenated blood is analyzed to extract an oxygen saturation map of the retina.

Oxygen Saturation - Human Retina

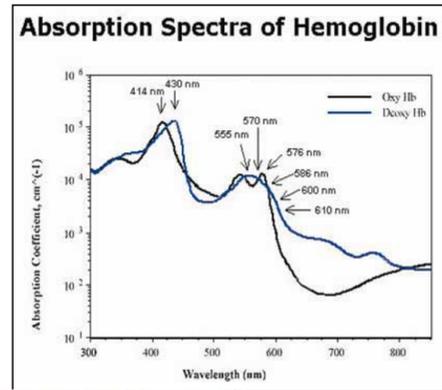


Enhanced Color Image

Enhanced color and vascular Image can also be derived using spectral data



Oxygen Saturation Map

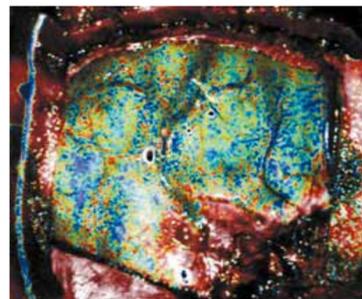


Functional Brain Activity Mapping

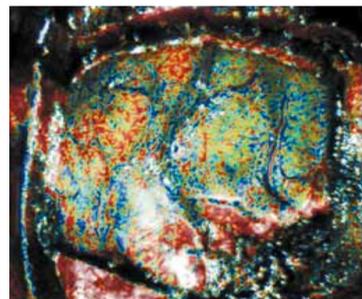
Oxygenation level is analyzed based on reflectance spectra of the cortex during surgery.

The Cortex is imaged before (Base OS Map) and during stimulation of the brain (Stimulation OS Map) to extract the oxygen level at each cortex point.

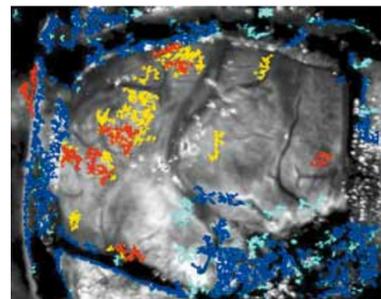
The Activity Image is derived by analyzing the difference of those two maps.



Base OS Map



Stimulation OS Map



Activity Image

- Large increase in OS
- Low increase
- Large reduction in OS
- Low reduction

For Research Use Only

Forensics - Classification and Analysis

GenASIs SpectraView can analyze a check that has been manipulated by using two different inks of the same color. In this case, extra lines changed the digit 3 into 8, and the forgery was detected using GenASIs SpectraView.



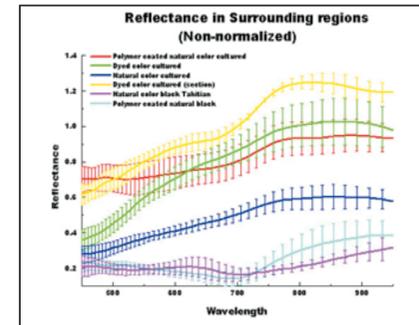
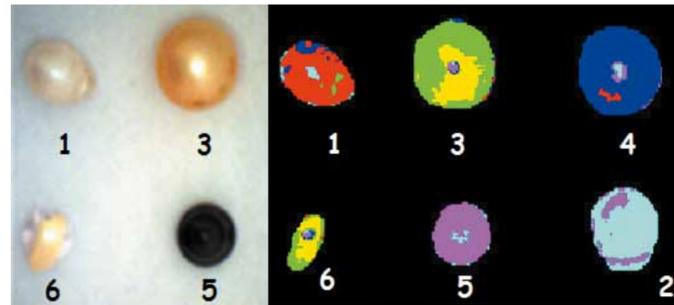
Original image from check



Spectrally classified check

Gemology - Classification of Gems

SpectraView enables the characterization and identification of natural and synthetic pearls and other natural



GenASIs HyperSpectral HyperSpectral Imaging Solutions for Remote Sensing

Applied Spectral Imaging (ASI) makes patient care better through advanced biomedical imaging.

The GenASIs Automated Imaging Platforms for Genetic and Pathological Analysis are the foundation of ASI's offering. With superior imaging and analysis capabilities, ASI provides state-of-the-art diagnostic aids, offering cytogeneticists and pathologists accurate analysis. GenASIs enables automated tissue analysis for primary diagnostics, with reproducible and reliable results. GenASIs Hyperspectral with HiSKY® Probes adds a new dimension to biomedical image analysis.

GenASIs is FDA cleared for FISH clinical applications such as UroVysion, HER2/neu, CEP XY and Karyotyping. ASI complies with major regulatory requirements and international quality standards.

ASI is the industry's leading microscopy imaging solution provider since 1993, with over 30 registered patents in the US, Europe and Japan and over 2,500 systems deployed worldwide. With worldwide offices in the US, Europe and Asia, ASI has built a global network of over 50 distributors

North America

Applied Spectral Imaging Inc.
Tel: + 1 760 929 2840
E-mail: sales-inc@spectral-imaging.com

Headquarters

Applied Spectral Imaging Ltd.
Tel: +1 817 886 6031
E-mail: sales@spectral-imaging.com

Europe

Applied Spectral Imaging GmbH
Tel: + 49 6203 923800
E-mail: sales@spectral-imaging.com

www.spectral-imaging.com

DOC000125 Rev. A

ASI
Applied Spectral Imaging
Bringing Details to Light



GenASIs HyperSpectral for Remote Sensing

GenASIs HyperSpectral platform is based on a cutting-edge, dual-mode optical device, which allows both interferometer-based image capture for hyperspectral imaging and a direct view mode for high-resolution CCD image capturing. The hyperspectral data reveals the spectrum of every pixel in the image, and provides advanced analysis tools to extract quantitative and hidden information from within the sample. In Direct View mode, the system records image details under extremely low intensities and provides a finely detailed, high-resolution and high-definition image.

ASI's GenASIs SpectraView enhances your capabilities when analyzing samples enabling :

- Imaging a spectral range twice as wide as the visual range, revealing hidden information
- Un-mixing multiple colors, resolving co-localized image components
- Removing background signals, in bright field or auto-fluorescence, and enhancing cluttered signals

This system allows the user to investigate samples and identify the true physical and component characteristics.

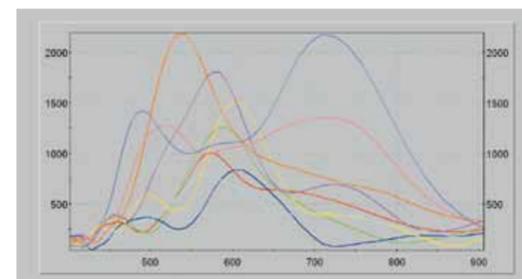
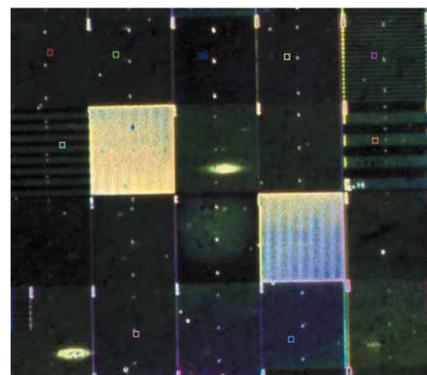
Why ASI's HyperSpectral?

- Spectral range: 400-1100 nanometers, covering the entire visual range and the low NIR range
- User defined spectral resolution is 6nm at 400nm, with capability for improved spectral resolution up to 3nm with the high resolution setup option
- Dual mode enables both hyperspectral capture and regular monochromatic imaging on the same system
- Does not require use of non-polarized light
- Transmission efficiency is higher than 80% for the entire visual spectral range, making GenASIs SpectraView suitable for fluorescence and other faint applications
- 16 bit spectral data per pixel
- Simultaneous measurement of all wavelengths with full image alignment between layers
- Compatible with both cooled (-20 degrees Celsius) as well as non-cooled 12 bit digital cameras (1.3M pixels, ~70% peak Quantum Efficiency)
- Advanced database for research and clinical applications



Semiconductors - Wafer Coating Thickness Map

Spectral measurements are used in the semiconductor industry for defect identification along various steps in the manufacturing process. A unique application is extracting a layer thickness map.



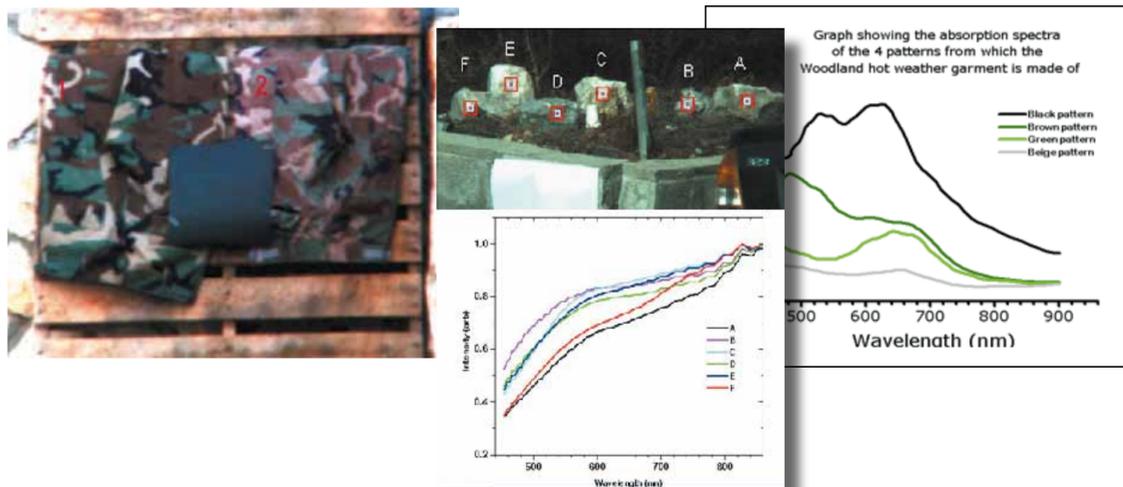
The corresponding non-normalized spectra for the locations of the image on the left

Nine 5x5 pixel region locations (small squares) for which spectra have been extracted. All other locations on the RGB picture have the same type of information. The current picture is taken at a moderate spectral resolution.

Detection of Woodland Camouflage Patterns

The spectra of woodland camouflage patterns is analyzed in order to test its applicability.

Sensitive measurements using GenASIs SpectraView allow the detection of the slightest change in the reflection spectrum caused by temperature changes.



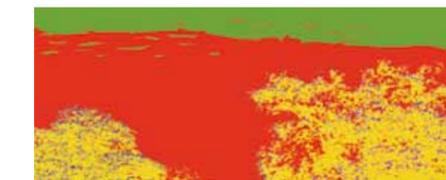
Remote Sensing - Observing the Differences

Water Inspection / Algae

GenASIs SpectraView is used to analyze the content of algae in water by observing differences in the reflection spectrum from the sun. The differences stem from the algae absorption spectrum.



Overcoming haziness



Botany (Vegetation index), Environmental Monitoring

Absorption in Plants

Chlorophyll has a well-defined absorption spectrum, as shown.

Stress applied to the plant affects its absorption and is detected by SpectraView.

GenASIs SpectraView was used to detect the effect of Roundup (pesticide) over several days. The analysis showed no change in the spectrum of the normal plants.

