

IRIS-II

Spectral Imaging

IRIS-II is a complete, flexible instrument for imaging the compositional and structural information of layered surfaces. It is fully portable and independent enabling the examination of objects *in situ* (museums, conservation laboratories, archaeological areas).

Features:

- ✓ High spatial resolution (5MPixel)
 - ✓ High spectral resolution (28 spectral regions)
 - ✓ High spectral sensitivity (350nm-1200nm)
 - ✓ Portable - two parts system
a) Head, b) Laptop
 - ✓ Mobile
- Operates up to 2h with a 12V battery
- ✓ Dedicated user friendly software
 - ✓ Non destructive – Non contact technique

Applications:

- ✓ Art Conservation (under-drawings, over-paintings, varnishes)
- ✓ Archaeology (marbles, ceramics)
 - ✓ Food (quality characterization)
- ✓ Industry (analysis, quality control)
 - ✓ Medicine (optical biopsy)



IRIS₂₀₁₀ (*infrared imaging system*) provides detailed information related to the chemical composition of materials, based on reflection and fluorescence spectroscopy.

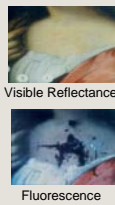
The development of the system was financed entirely from the Institute of electronic structure & Laser (IESL), FORTH,

Spectral Imaging in Art and Archaeology

SELECTED EXAMPLES

Reflectance – Fluorescence Imaging

Through Reflectance and Fluorescence Imaging it is possible to differentiate between the original and the over-painted areas of a painting, based on the different chemical composition of pigments. In the shown example the original white layer is lead white, while the over-painting was found to be titanium white. Given that titanium white was commercially available after 1920 the era of the conservation interventions is estimated to be the beginning of the 20th C.

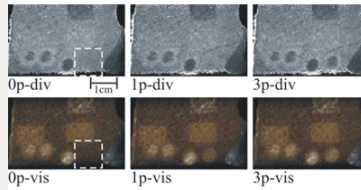


Visible Reflectance

Fluorescence

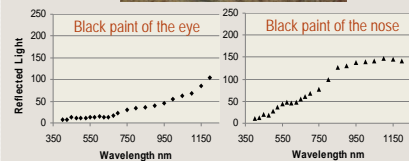
Monitoring of cleaning interventions

Spectral Imaging allows monitoring on-line, non-destructively and in situ the cleaning level of pollution encrustation on stonework. The developed methodology is based on the optical properties of monochromatic light penetration in matter. The calculated differences of images, obtained at two different spectral bands, can reliably map the depth of cleaning.



Pigment Identification

Spectral Imaging provides combined analytical information from the reflectance or fluorescence spectra related to the chemical composition of the pigments along with high spatial resolution. In the shown example it is shown that in every pixel a full spectrum can be acquired, in order to differentiate and/or identify pigments of similar hue.



IRIS-I

IRIS-I is a mobile Spectral Imaging System with 2MPixel color CCD sensor, 15 interference filters covering the detectors sensitivity range from 380nm-950nm.



Specifications

Sensor: Color CCD
Spectral Sensitivity: 380-950nm
Spectral Bands: 15
CCD resolution: 1600*1200 pixels
Sensor lens: C-Mount type (exchangeable)
Dimensions (LXWXH)
Laptop: 15.4 Inch
Head: 23X16X8.5 cm (overall)

IRIS-II

IRIS-II is a mobile Spectral Imaging System with 5MPixel Monochrome CMOS sensor, 28 interference filters covering the detectors sensitivity range from 350nm-1200nm.



Specifications

Sensor: Monochrome CMOS
Spectral Sensitivity: 350-1200nm
Spectral Bands: 28
CCD resolution: 2560*1920 pixels
Sensor lens: C-Mount type (exchangeable)
Dimensions (LXWXH)
Laptop: 15.4 Inch
Head: 21X16X6.5 cm (overall)

Contact: Vassilis Papadakis, IESL – FORTH, PO Box 1527 – 71110 Heraklion Greece, e-mail: bilyp@iesl.forth.gr, tel.: +30 2810 391267 Website: www.iesl.forth.gr