

XpeCAM® X02

THE MULTI-SPECTRAL
ACQUISITION SYSTEM
FOR ART ANALYSIS



350 TO 1200 nm (UV – VIS – IR)
AUTOMATIC/MANUAL MODE
EXCHANGEABLE LENSES
LIGHTWEIGHT AND PORTABLE

SPECIFICATIONS

XpeCAM® X02 is an affordable, portable, user-friendly solution that performs non-destructive analysis based on each material spectral properties. Extract more information from a artwork focusing on the: deep understanding of underdrawings, characterization of paint layer and pigment mapping, detection of overpaints, and examination of the coating layer structure.

SPECTRAL SENSIVITY RANGE/NUMBER OF FILTERS	350 – 1200 NM/ 30 FILTERS
SENSOR	8-BIT MONOCHROMATIC
IMAGE RESOLUTION	6,4 MPX (3088 X 2076 PX)
STANDARD COLOR	BLACK
DIMENTIONS/WEIGHT	86 X 188 X 190 MM / 2 KG
CABLE	USB 3.1 GEN 1 – TYPE C
ILLUMINATION SUPPORT (OPTIONAL)	ABS - LAMPA (WI-FI)
HARDWARE STATUS	LED INDICATOR
MOUNTING BRACKET	STANDARD TRIPOD
PROTECTION INDEX	IP10

SET UP

POSITION	FACING OBJECT, 0 ANGLE OF INCIDENCE
OPTIMAL DISTANCE	AROUND 1,5 METERS

AVAILABLE LENS

MOUNT TYPE (EXCHANGEABLE)	C-MOUNT
LENS AND ACQUISITION AREA	
35 MM (DEFAULT)	A4 SIZE
25 MM (OPTIONAL)	A3 SIZE

AVAILABLE CALIBRATIONS

XDRT	A4 AND A3
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AVAILABLE MODES

AUTOMATIC MODE	13 MIN*
SPECTRAL ACQUISITION RANGE	400-1000 NM
ACQUISITION TIME	13MIN*
MANUAL MODE	10 - 1500 MSEC
SPECTRAL ACQUISITION RANGE	350 – 1200 NM
ACQUISITION TIME	10 – 1500 MSEC

LAMPA

THE COMPLETE ILLUMINATION
SYSTEM FOR ART ANALYSIS



UV – VIS – IR
AUTOMATIC/MANUAL MODE
EASY LAMPS REPLACEMENT
LIGHTWEIGHT AND PORTABLE

SPECIFICATIONS

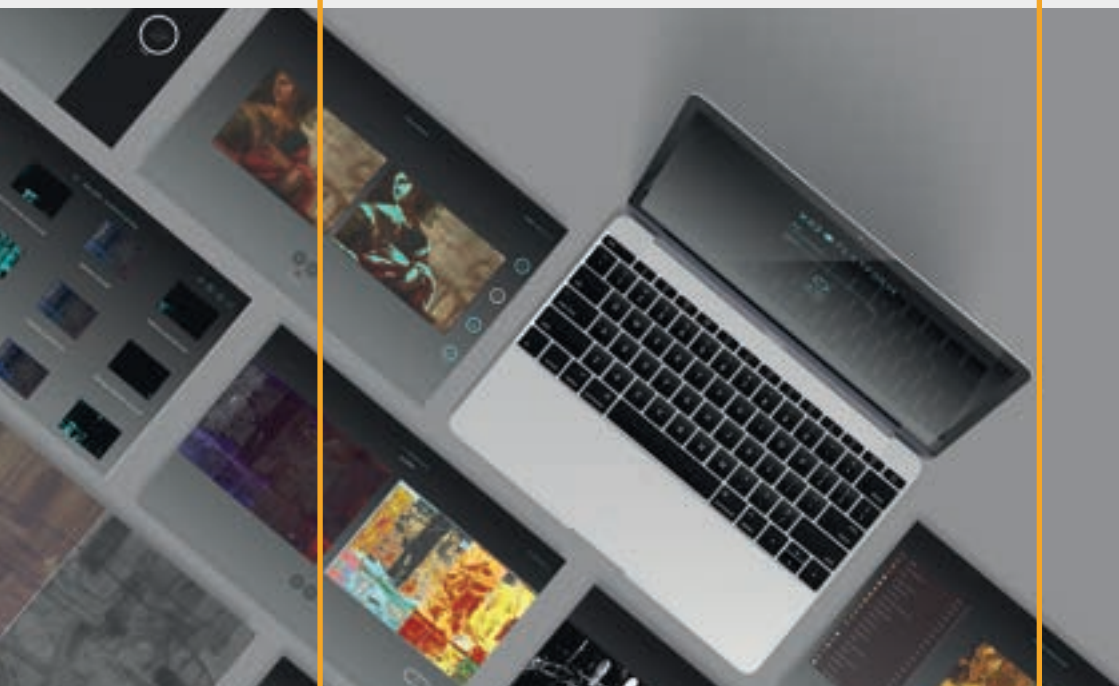
LAMPA is an all-in-one UV-VIS-IR illumination system dedicated to Art Conservation needs. LAMPA MASTER has a remote-control feature and LAMPA Satellite increases the illuminated area and improves illumination homogeneity.

	LAMPA MASTER	LAMPA SATELLITE
SPECTRAL EMISSION RANGE (UV-VIS-IV) (STANDARD LAMPS; PRODUCER INFORMATION)	360 - 1200 NM	
STANDARD COLOUR	BLACK AND WHITE	
MATERIAL	METAL AND ACRYLIC	
WEIGHT / DIMENSIONS	2,5 KG / 285 X 138 MM	
POWER SUPPLY	AC 220 V/ 240 V	AC 220 V/ 240 V
ON/OFF BUTTON	YES	NO
CABLEING	ENERGY CABLE	CONNECTING CABLE
WIRELESS CONNECTION	CONNECTION TO XPECAM® X02*	NO
WIRELESS CONTROL	BY XPECEYE	FOLLOW LAMP MASTER
WAVELENGTH - MANUAL MODE	YES	
INTENSITY - MANUAL MODE	YES	
STATUS INDICATOR	LCD MONITOR	NO
MOUNTING	STANDARD THREAD 1/4" -20 UNC FOR TRIPOD	
OPTIMAL ILLUMINATION AREA	± A3 SIZE	
EASY LAMP REPLACEMENT	YES	
VENTILATION OPENING	PASSIVE - AIR GRILL	
PROTECTION INDEX	IP20	
INSULATION CLASS	TYPE 1	

*Automatic mode is provided using the complete XpeCAM® solution, where LAMPA directly responds to the lighting needs of the XpeCAM® system.

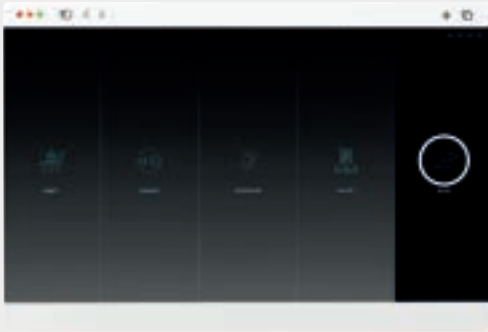
XpeCAM® CLOUD

THE A.I. FOR ART ANALYSIS

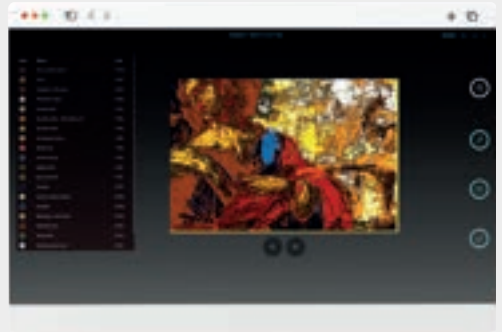


CLOUD-BASE WORKSPACE
PIGMENTS CLASSIFICATION
PIGMENTS AND MATERIALS MAPPINGS
AUTO GENERATED REPORTS

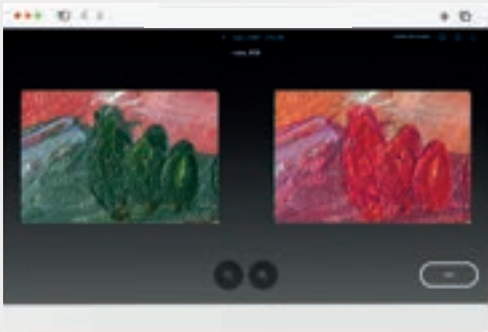
SPECIFICATIONS



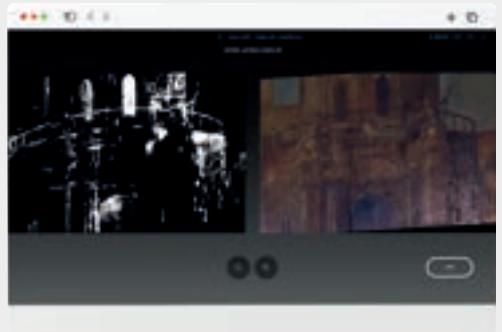
1. Dedicated Workspace



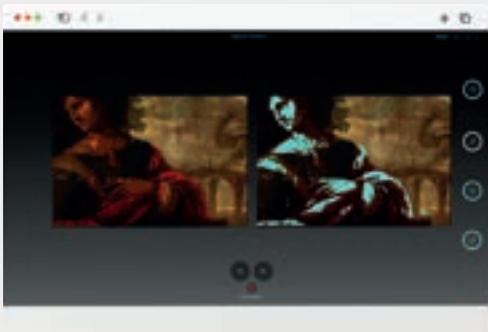
2. Intelligent Pigment Classification



3. Two Infrared False Colours



4. Artificial Intelligence Results



5. Similar Spectra select and map



6. Automatic Generated Reports

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XpeCAM[®] SOLUTION

Bringing Spectral Imaging to Cultural Heritage



INTRODUCTION TO XpeCAM® Solution

Spectral imaging technology is well known in the Heritage & Conservation practice for a long time since the introduction of filters coupled to analog cameras for technical photography.

Nowadays, the digital era of modern sensors, allows to computationally explore digital data, compare, cluster, and apply machine learning and artificial intelligence methodologies.

XpeCAM® is a multispectral solution developed to analyse artwork in a non-destructive way. This allows non-touching measurements of surface areas to be easily acquired, and extract deep knowledge information as pigment classification, automated mapping of different materials, and more.

HOW IT WORKS

Only two steps are required:

- Acquire data using tech automated hardware
- Upload data into XpeCAM® platform for automatic processing and analysis.

The XpeCAM® Solution is composed by:

- (1) XpeCAM® X02 - the multispectral acquisition device
- (1) XpecEYE software - the data acquisition software to operate XpeCAM® X02 in your local computer, without internet
- (1) LAMPA Master - a broadband UV-VIS-IR light source
- (1) LAMPA Satellite - one support light source to promote light homogeneity
- (1) XpeCAM® Platform Access - cloud based workspace to process, analyze data, and manage work.



EXCHANGEABLE LENSES



LAMPA



SET XpeCAM® Solution



XpeCAM® X02



APPLICATIONS

The XpeCAM® Solution aims to answer essential questions in Cultural Heritage field as the in-depth study of the characteristics of a surface, without the necessity of taking physical samples.

Professionals are searching for changes in a surface, whether they belong to different materials or to material degradations, as also to monitor the treatments' progression, through non-destructive analysis:

- **Visualize a painting in Ultraviolet, visible, and Infrared for better analysis**
- **Characterize and map pigments and repaints existence**
- **Certify that cleaning tests are performed without damages**
- **Monitor the varnish removal during a conservation treatment**
- **Ensure the homogeneous application of a varnish layer**
- **Understand the colour fading through time, by comparative analysis**

...and this is just an example of a work process in a single painting.

Therefore, XpeCAM® is a fast, portable, and reliable solution to use from the first approach to artworks. It will empower your knowledge about what is really happening in the surface!

CASE STUDY 1

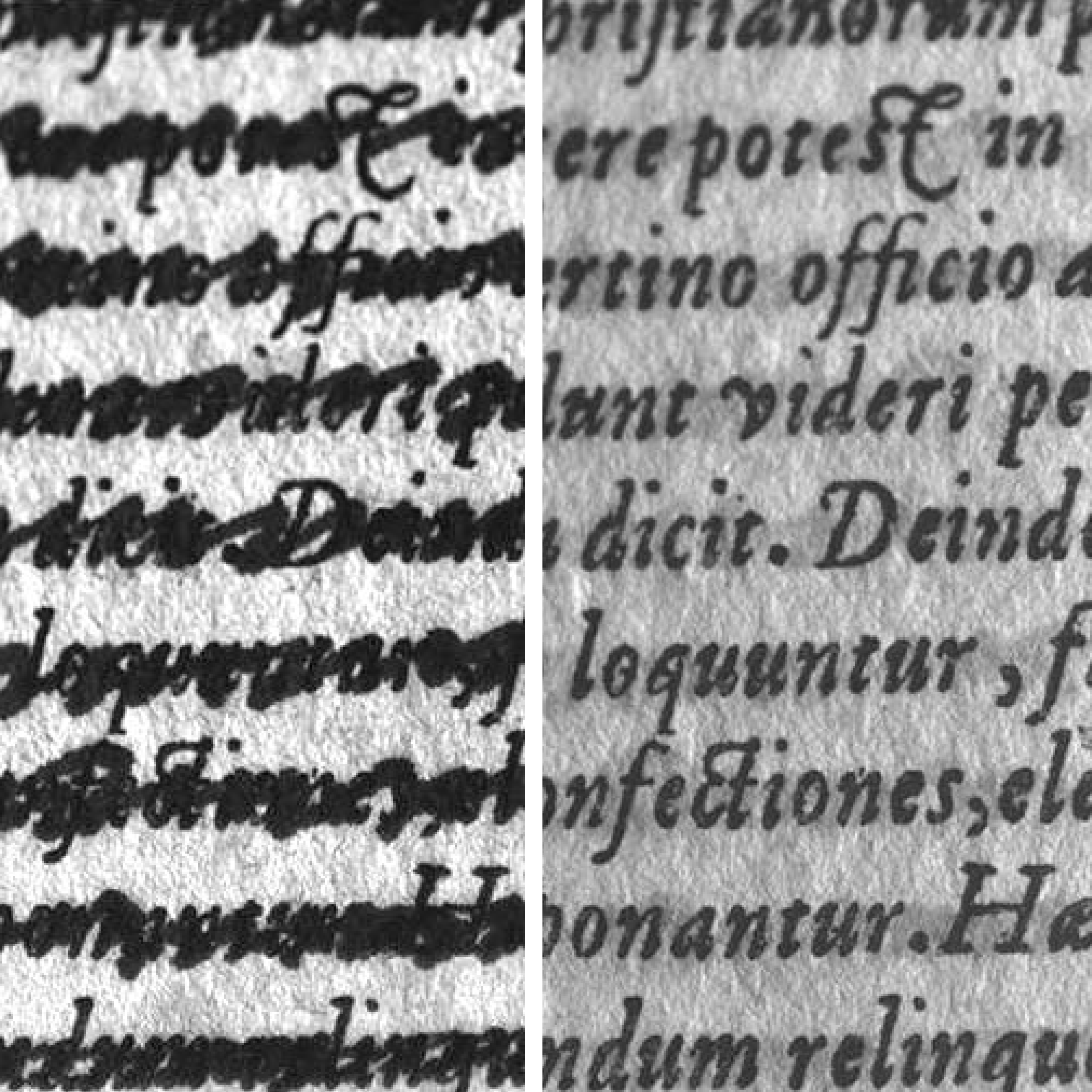
PAINTING ON CANVAS

XpeCAM® empowers professionals with **results** from a fast and non-destructive analysis of the surface. This is made possible, by a fast multi-spectral data acquisition device, and an **automated data processing and analysis platform**.

Results allow the user to understand the material dispersion through **automatically generated surface mappings**, **track treatment processes** and **monitor changes after intervention**.

Comparison of one Artwork, between what we see with our eyes, and what XpeCAM® provides regarding pigments classification (95% matching with our Material Database). Want to know more? Contact us!





CASE STUDY 2

GRAPHICAL DOCUMENTS

Hidden information encrypted by censorships, or vanished contents through time, is again accessible **without the use of any hazardous chemical treatment**. XpeCAM® enhances data visualization, allowing our eyes to see what is invisible. It is now possible to **process large amounts of documents in a fast pace**, empowering institutions to offer a democratic access to new data.

In the left image we can see a censored text with iron gall ink. A digital ink removal was automatically done as seen in the right image. Try to imagine the amount of new information that you can unleash with this feature!

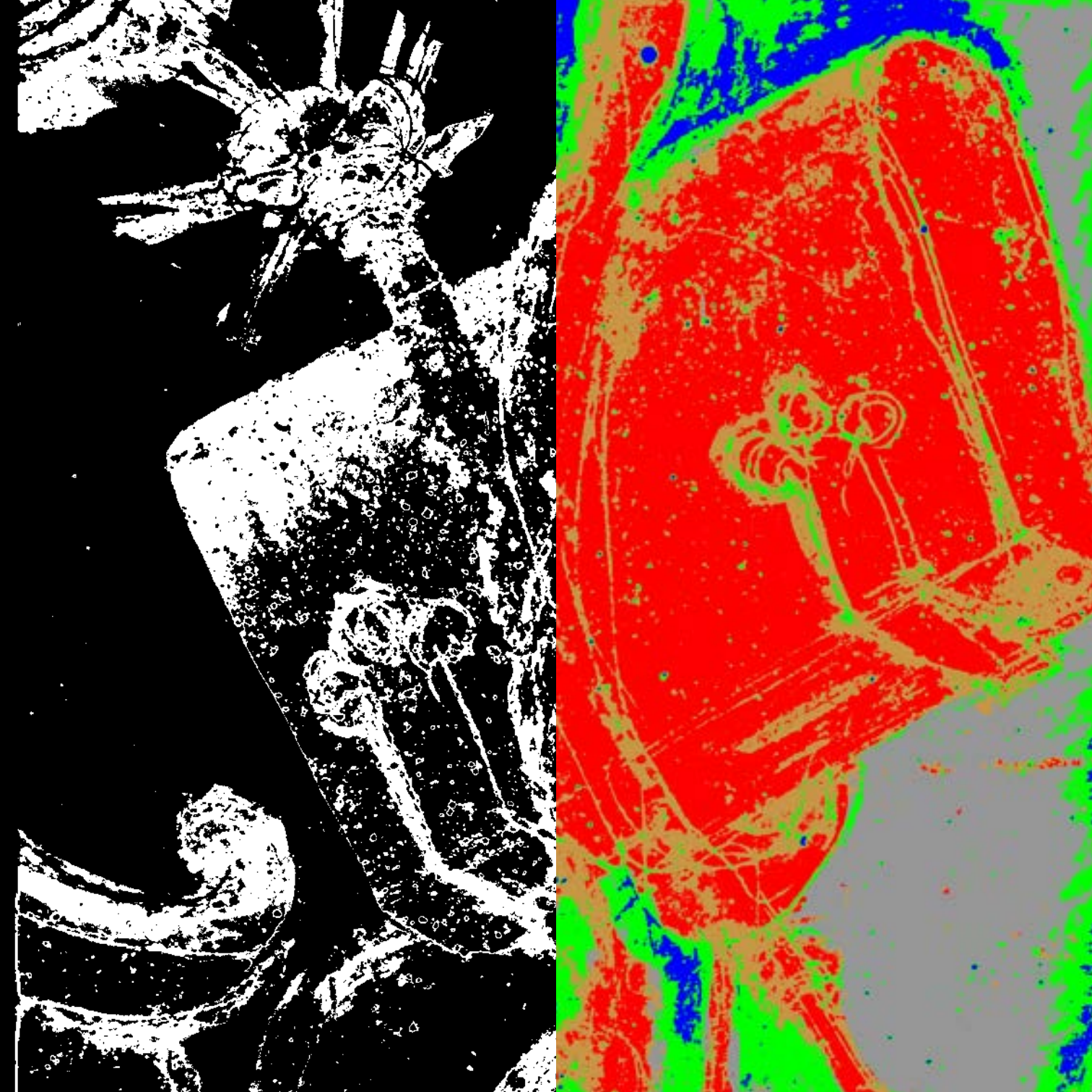
CASE STUDY 3

MURAL PAINTING

XpeCAM® provides information on Mural Paintings from the light that cross them. It is then possible to **understand the initial constructive draw schemes, the colours, or the pathologies dispersion across the surface.**

From the infinite type of inks and mixture recipes, we can always enhance the surface's immersive interpretation.

In the image on the left, a black and white PCA analysis is presented, and in the image on the right, the clustered materials are enhanced in pseudocolor, enabling a better understanding.



WHO WE ARE?

Born on 2014, the world of imaging diagnostics, **XpectralTEK®** is the result of several years of work, experience, and ambition for constant improvement in spectroscopy, imaging and computing science focusing in the professionals needs on Cultural Heritage.

Powered by  **XPECTRALTEK®**

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