Gorgias - Reflectance Spectroscopy system

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We have developed Gorgias, the Reflectance Spectroscopy System for art professionals. It uses a simple software and has plenty of features specifically designed for art examination.

In brief

Reflectance Spectroscopy shows, for each wavelength, the ratio between the intensity of the reflected light and the incident light, measured with respect to a standard white reference (reflectance). The reflectance spectra provide information useful for the identification of pigments.

> ***Gorgias***, our Reflectance Spectroscopy System designed for the examination of Art and Archaeology.

Gorgias Reflectance Spectroscopy System has 3 components. A professional *Reflectance spectrometer*, a convenient *Reflectance fiber probe*, and a compact *Light Source*. The Reflectance Spectrometer covers the spectral range 300-1000 nm with 2 nm resolution. It has a new 16 bits electronics for better signal and less noise. You can plug it directly to your laptop with a simple USB cable and start to analyze artworks. Bring it with you for your field projects, it weighs just 430 grams and fits in your palm. At its heart is a linear array featuring 3648 pixels, for high-quality professional reflectance spectra. The system allows measuring practical in any positions thanks to its convenient reflectance fiber probe.

Gorgias, who was him?

We name our tools after famous scientists, artists, and writers that enriched Sicily's long history. Gorgias (c. 485 – c. 380 BC) was a Greek sophist and pre-Socratic philosopher and rhetorician who was a native of Leontini in Sicily. Along with Protagoras, he forms the first generation of Sophists. His chief claim to recognition is that he transplanted rhetoric from his native Sicily to Attica. He is considered to be one of the founders of sophism, a movement traditionally associated with philosophy, that emphasizes the practical application of rhetoric toward civic and political life.

What makes Gorgias unique for Art examination?

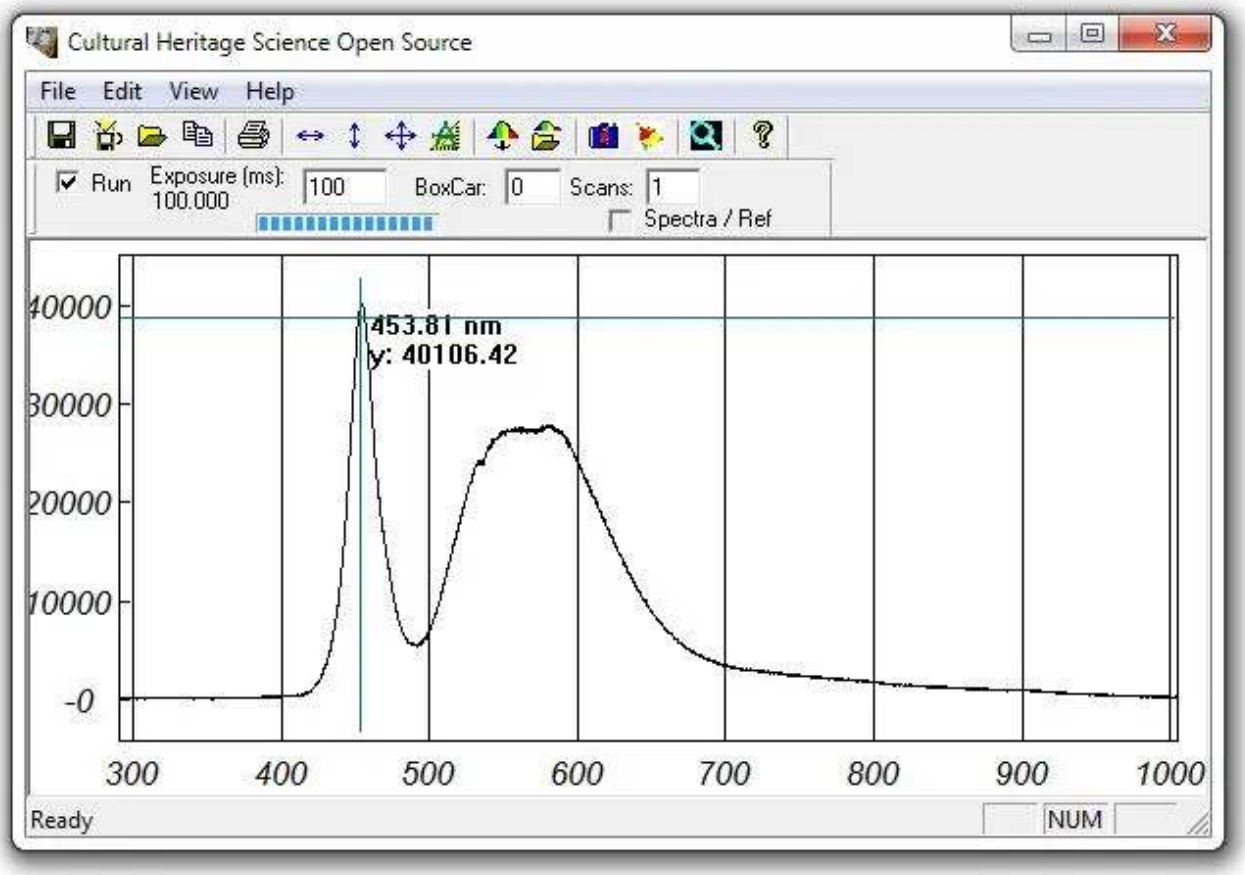
Mount for Photographic tripods

Only Gorgias has a mount for photographic tripods, just as a camera. How convenient! We work on scaffoldings and on-site, not just in laboratories, so we need to secure our spectrometer while taking the measurements.


Gorgias
chsopensource.org
Gorgias is the only spectrometer
that you can mount on a
photographic tripod
Cultural
Heritage
Science
Open
Source
chsopensource.org

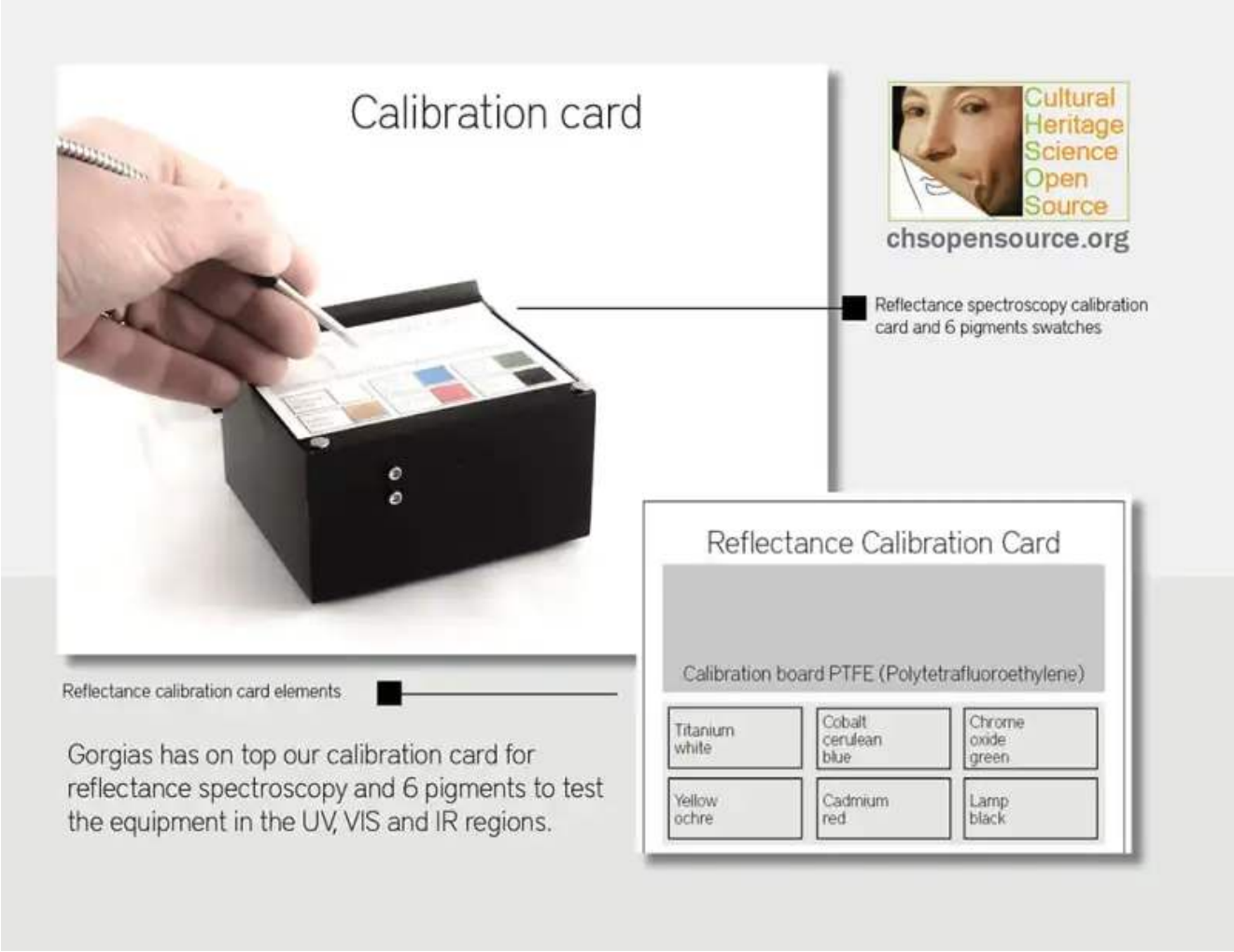
Simple software

Acquire and interpret reflectance spectra with our simple custom software for art professionals. It has just a few key buttons to make the workflow fast and easy. Just what we need. The complete software suite with much more functions is also provided with Gorgias. You can switch to one or the other at any time.



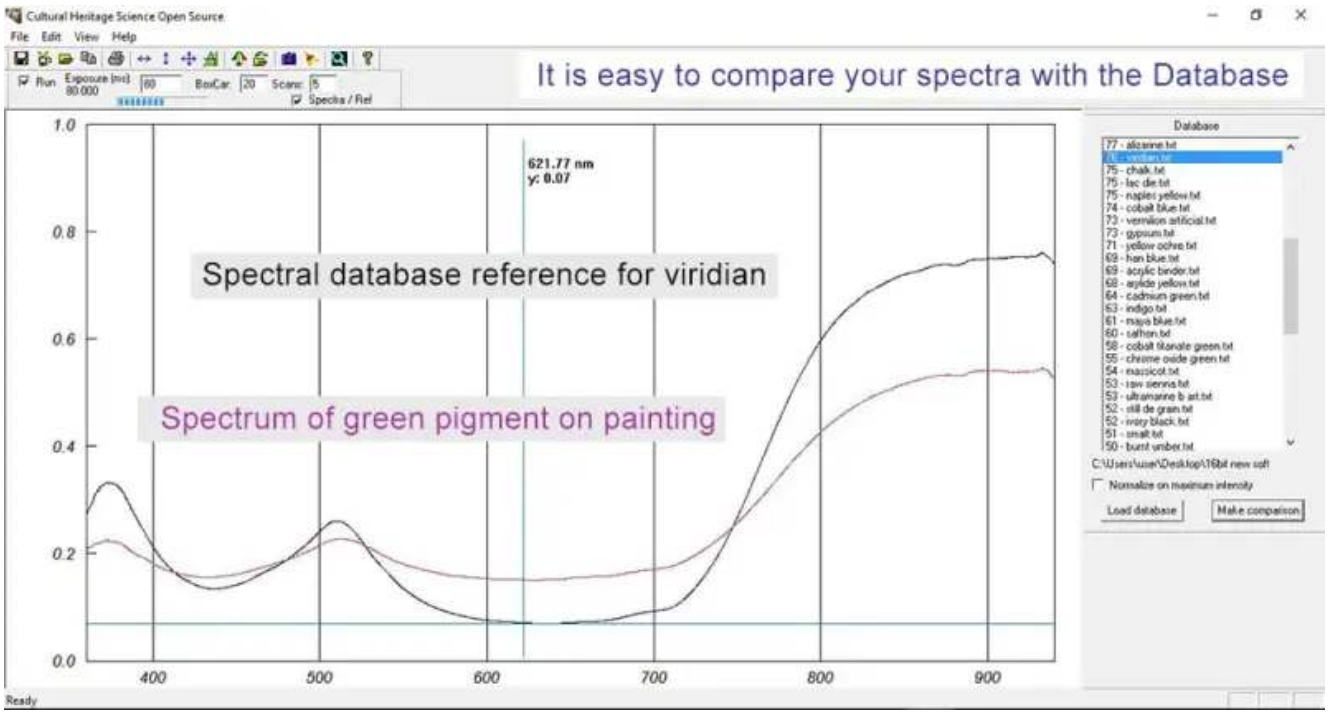
Standards for calibration

Gorgias brings on his top a calibration card and a set of selected historical pigments to double check the system is working correctly.



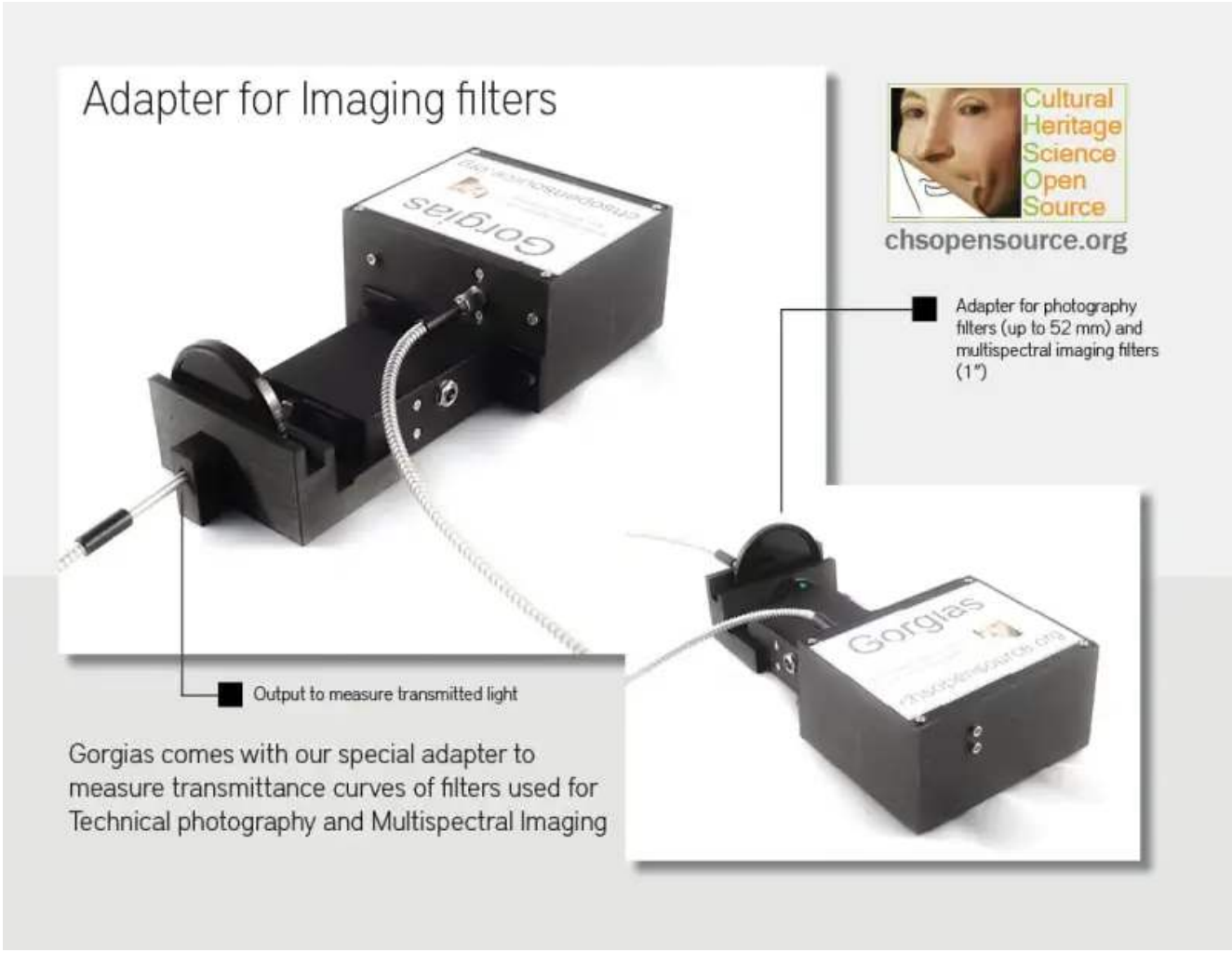
Free Spectral library of historical and modern pigments

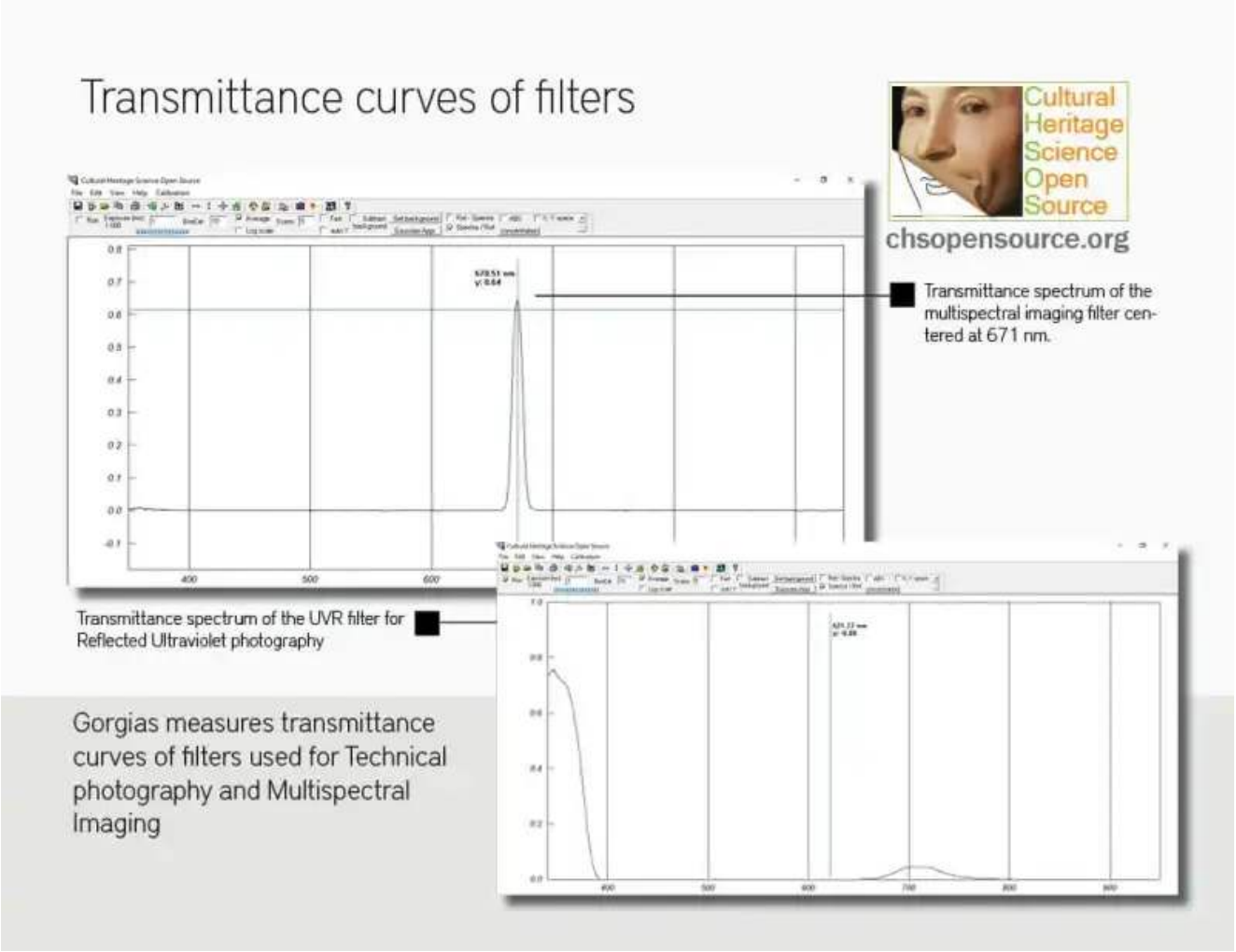
The software contains the reflectance spectra library of the historical pigments selected in Pigments Checker. You can compare immediately your acquired spectrum with our growing database. It is free and comes with the Gorgias software.



Adapter for Imaging filters

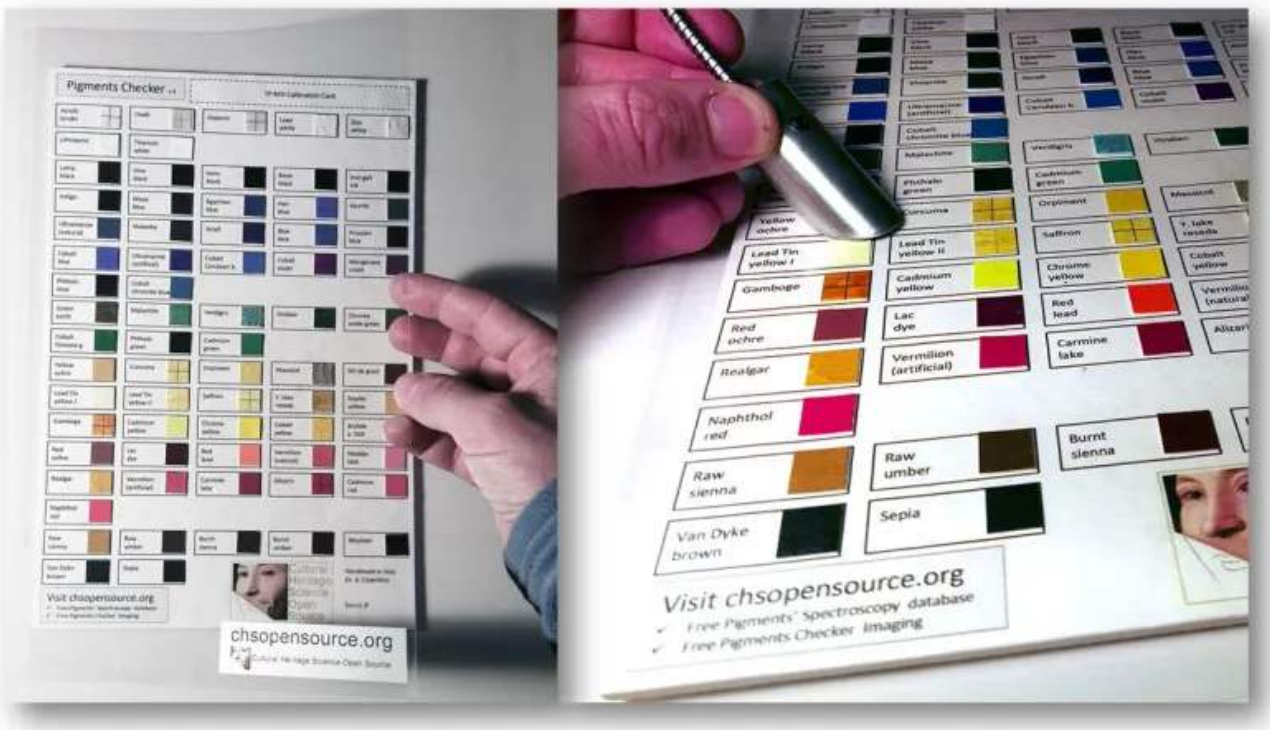
Gorgias comes with our special adaptor to measure transmittance curves of Imaging filters (technical photography filters and multispectral imaging bandpass filters). The art professionals using Imaging methods for the examination of art and archaeology need this adapter to measure or verify the transmittance of their filters.


Adapter for Imaging filters
Cultural Heritage Science Open Source
chsopensource.org
Adapter for photography filters (up to 52 mm) and multispectral imaging filters (1")
Output to measure transmitted light
Gorgias comes with our special adapter to measure transmittance curves of filters used for Technical photography and Multispectral Imaging



CHSOS protective sheet

Use this special sheet to protect the art you are analyzing and still get perfect reflectance spectra.



Technical specifications

Gorgias - Reflectance Spectroscopy system

Spectrometer

Weight: 430 grams
Dimensions: 102 mm x 84 mm x 59 mm
Detector: Toshiba TCD1304DG linear array (no interference pattern)
Detector spectral range: 300 – 1000 nm (100 microns slit)
Pixels: 3648
Pixel size: 8 um x 200 um
Pixel well depth: 100,000 electrons
Signal-to-noise ratio: 400:1 (10000:1 with averaging)
A/D resolution: 16 bit
Fiber optic connector: SMA 905 to 0.22 numerical aperture single-strand optical fiber.
Diffraction order sorting filter: included
Exposure time: 10 us – 60 s
CCD reading time: 14 ms
Power consumption: 100mA @ 5V from USB interface
Onboard memory capacity: 64 spectra
Data transfer speed: 200 ms / 100 ms (2 points binding)
Computer interface: USB 2.0, HID 2.0
Operational system: Windows 10 /Windows 8 / Windows 7 / Vista / XP ; 32/64b
Software: application software, driver,
Hardware: USB cable

Reflection fiber probe

Stainless steel tubing for extra strength. 7 x 600 microns core fibers (6 excitation fibers, 1 collection fiber). It is 1 meter long and it has a 45 degr. adapter for reflectance measures.

Light Source

Dimension (LxWxH): 90 mm x 80 mm x 31 mm

Weight: 70 g

Light source: 10W halogen lamp

Cooling: active, fan, 12 VDC, 25×10 mm

Power: AC-DC transformer, 100 – 240 VAC, Voltage output: 12 VDC

Spectral range: 300 – 1000 nm (halogen lamp)

References