cence Photography

Infrared Fluorescence Lamp - Cultural Heritage Science Open Source

IR

IRF

graphy (TP)
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chsopensource.org

Infrared Fluorescence Lamp - Cultural Heritage Science Open Source

Our Infrared Fluorescence lamp, Alice, is a low-cost alternative to expensive VIS-only scientific lighting systems. This lamp provides pure visible light for infrared fluorescence photography.

Some molecules and minerals (among them some pigments) exhibit Infrared Fluorescence. This phenomenon is similar to Ultraviolet Fluorescence where a beam of ultraviolet light produces visible light emission. In the case of Infrared Fluorescence, a beam of Visible light generates an emission of Infrared radiation. This photographic method allows to identify and locate cadmium pigments (cadmium red, cadmium yellow, cadmium green) and Egyptian blue. Infrared fluorescence photography is used in archaeology to detect even tiny fragments of Egyptian blue pigment.
Participate in our Training on Technical Photography to learn more.

Download our 2018 catalog and check out its current cost.

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— Catalog-2018.pdf – Downloaded 2690 times – 112 KB

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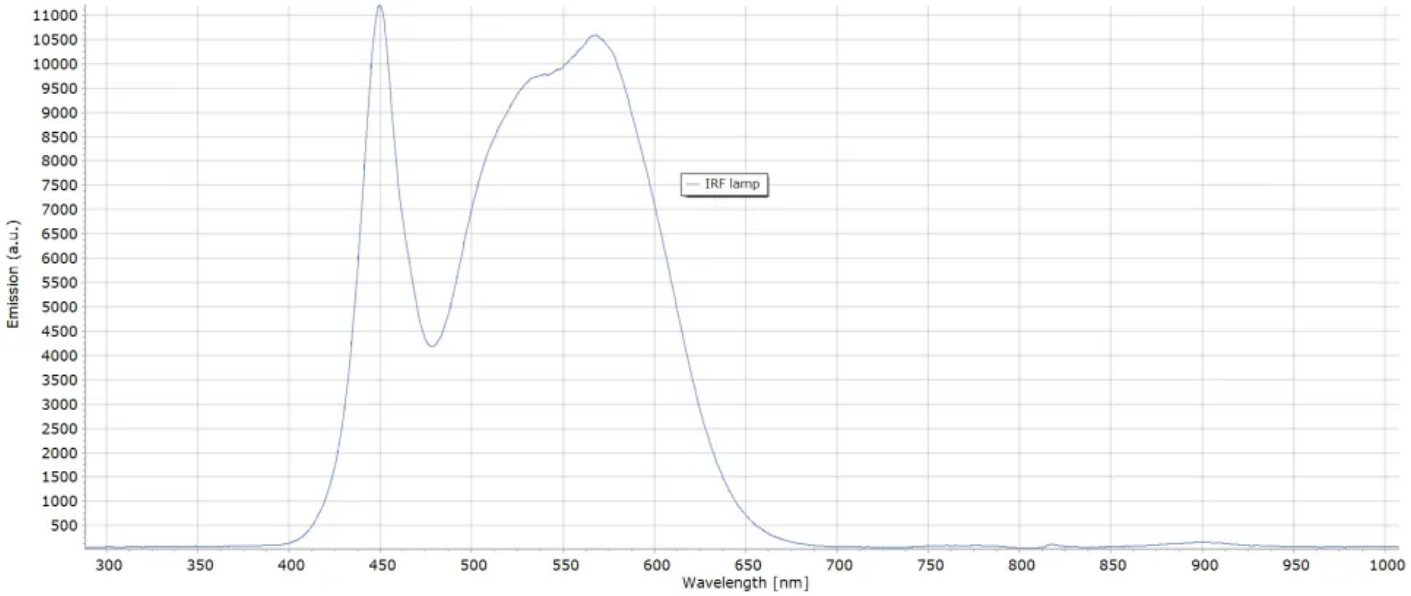
VIS-ONLY emission. This lamp emits radiation only in the visible range with a peak at 450 nm to excite Infrared Fluorescence emission of cadmium pigments, Egyptian blue, and han blue.



Emission curve of the IRF lamp.

Wors on 110 -220 -240 V. This lamp is part of the Technical Photography KIT which is designed for the traveler art expert. So, the lamp can work on both 110 V (as in the USA) and 220 – 240 (as in Europe).

Power emission. 1200 lumens

All of our tools work on both 110 V (USA) and 220 V (European) voltages. You can use them worldwide. We provide our tools with the original European power plug and a **free** power adapter to USA or UK standards depending on your choice.

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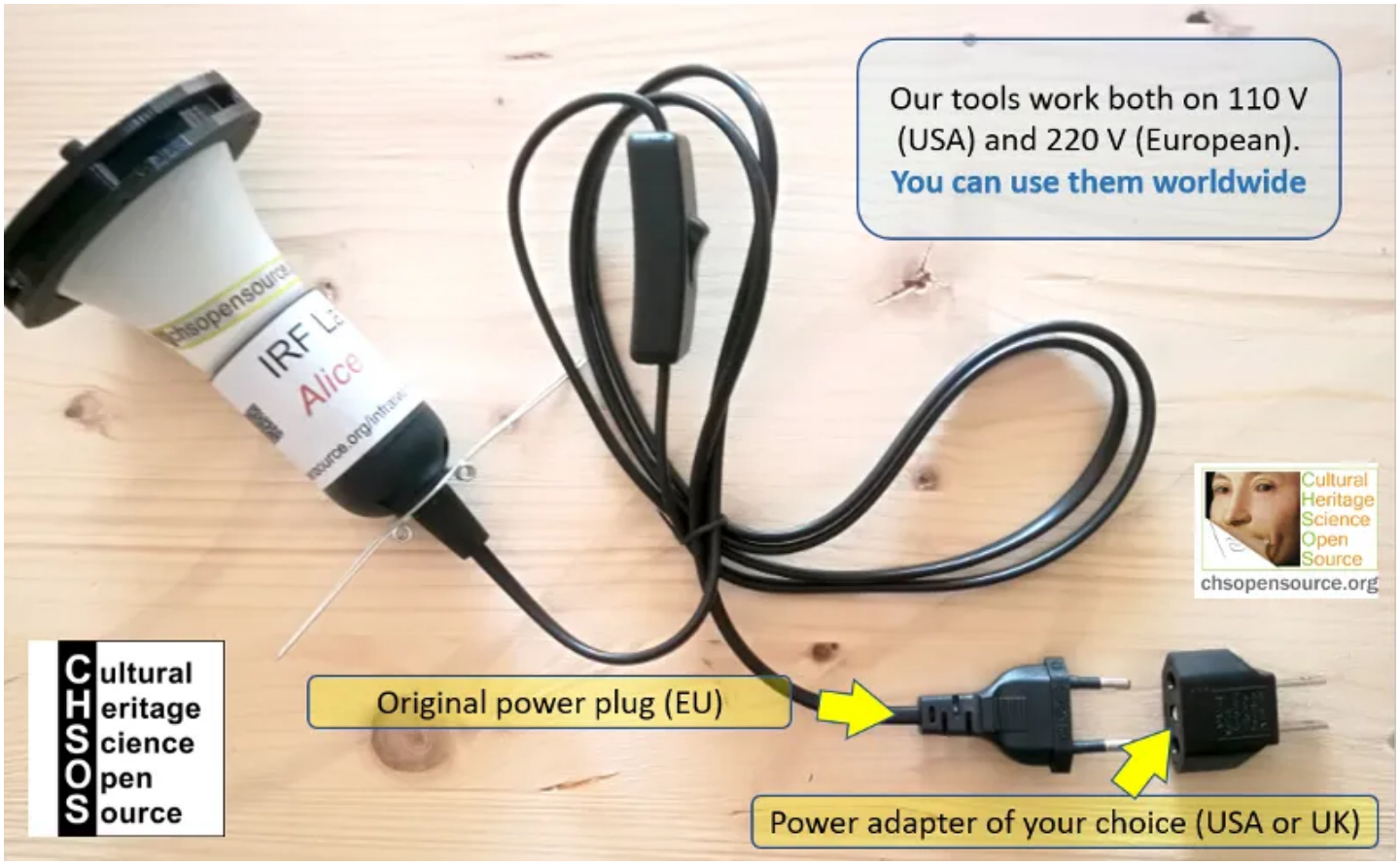

Infrared Fluorescence Photography (IRF)

Infrared Fluorescence photography is a useful method for the examination of works of art and archaeology. It is part of the Technical Photography documentation and allows to detect Egyptian blue and cadmium-based pigments.

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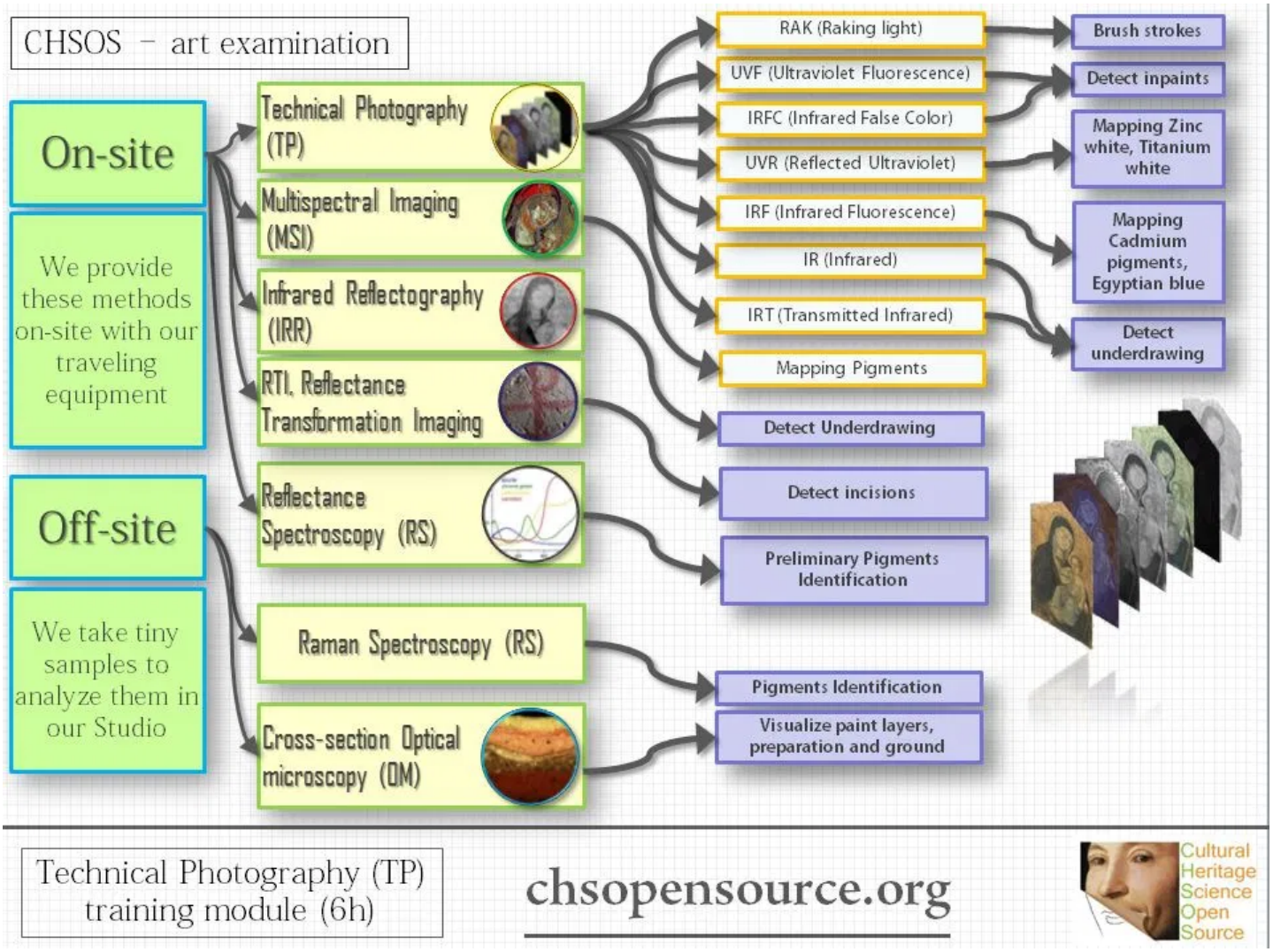

Infrared Fluorescence photography (IRF) is an important part of a Technical Photography documentation of art and archaeology.

Infrared Fluorescence phenomenon

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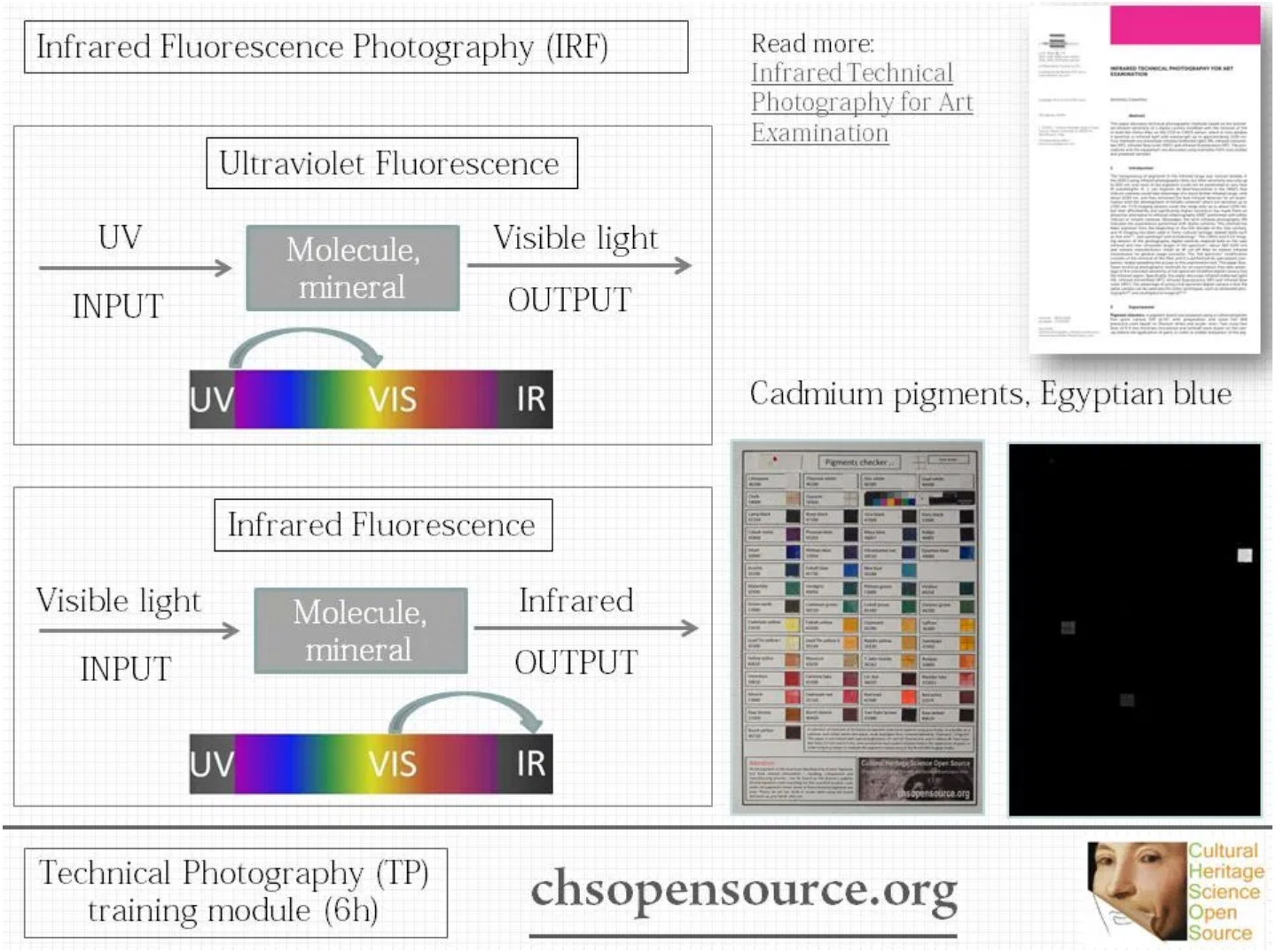

Some molecules and minerals (among them mineral pigments) exhibit Infrared Fluorescence. This phenomenon is similar to Ultraviolet Fluorescence where a beam of ultraviolet light produces visible light emission. In the case of infrared fluorescence, a beam of visible light generates an emission of infrared radiation.

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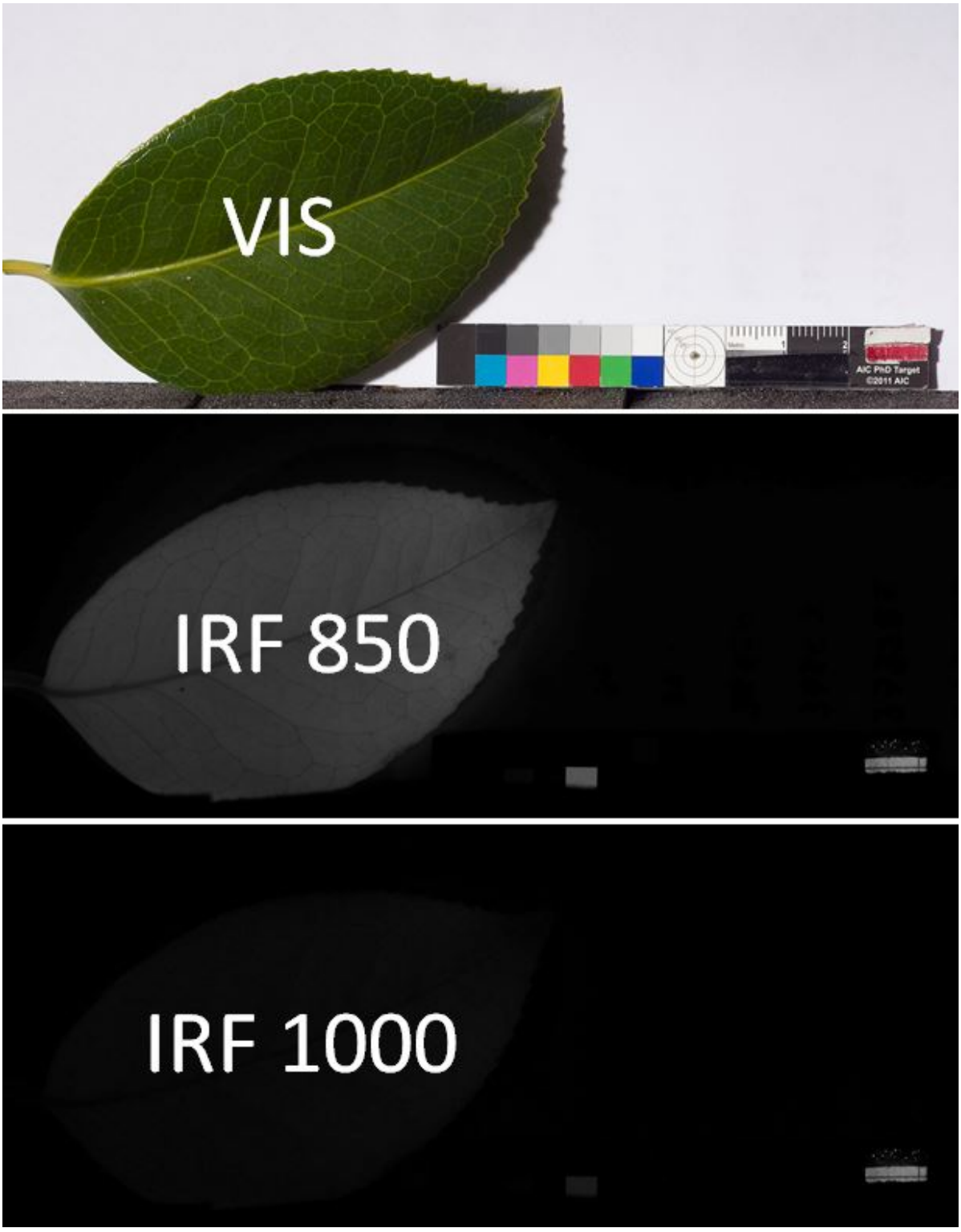

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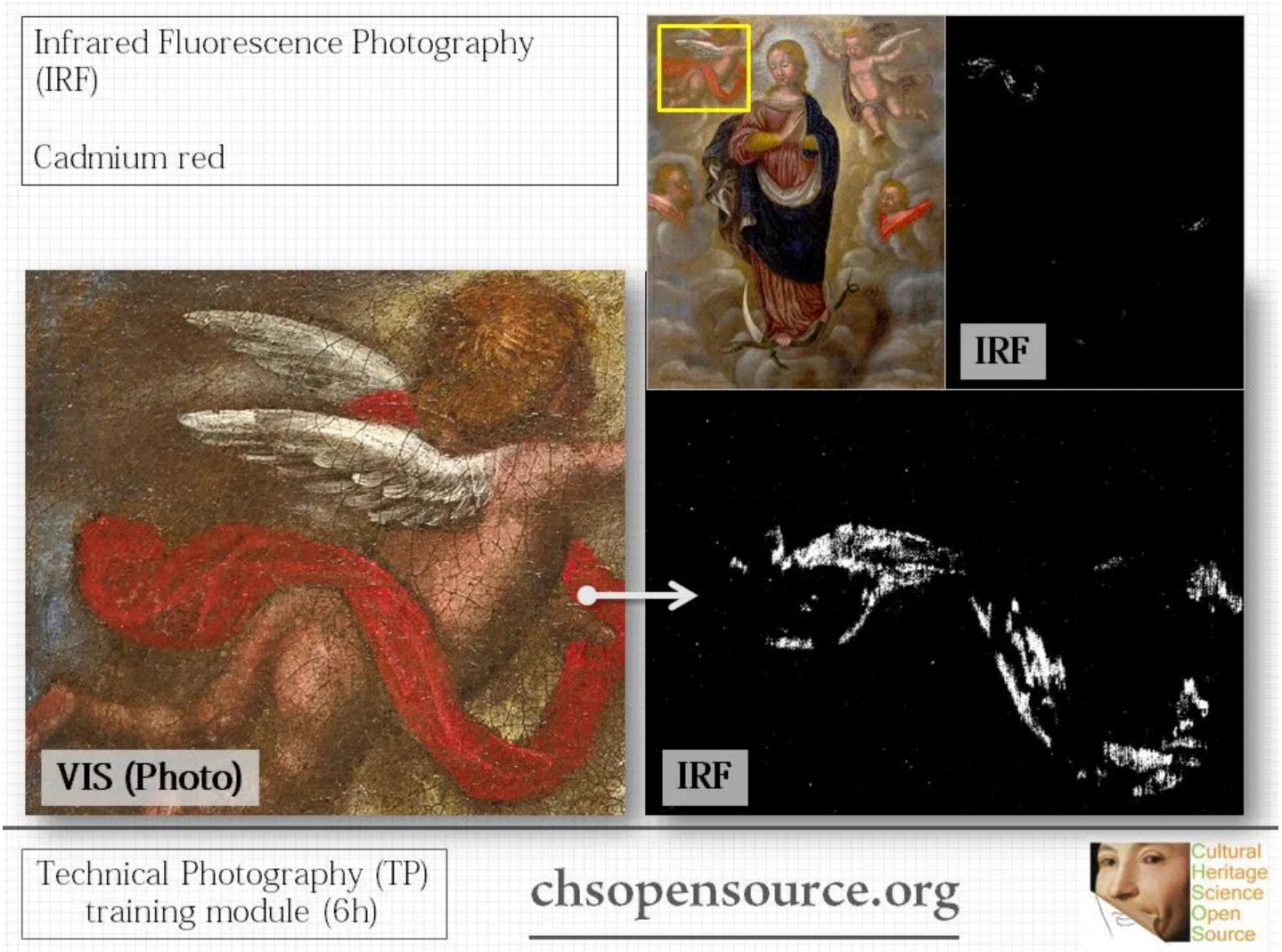
Infrared Fluorescence is observed in few rare minerals but also in a very common molecule, chlorophyll. Chlorophyll emits infrared fluorescence in the very near infrared. Indeed, its fluorescence is brighter in the IRF 850 image – where the 850 nm filter was used, allowing through the closest infrared. Notice that, on the other hand,the infrared fluorescence emission of the cadmium red swatch is almost unchanged since it happens at longer wavelength (over 850 nm).

Applications in Art examination



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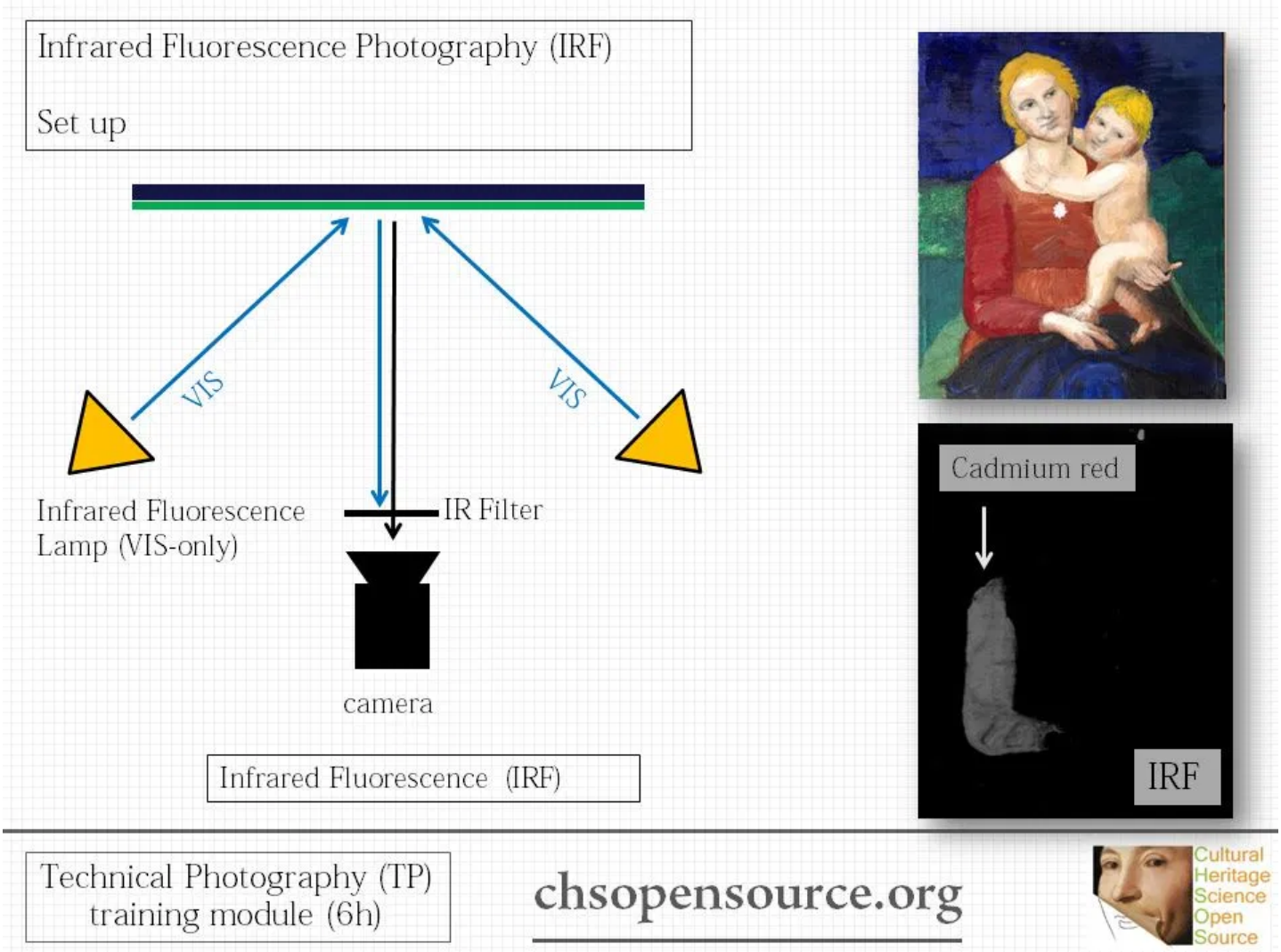
Among historical pigments Egyptian blue, cadmium red and cadmium yellow are the ones exhibiting infrared fluorescence. As the name says Egyptian blue is the blue actually used by the Egyptians and Romans. So, infrared fluorescence photography it's used in archaeology to detect even tiny fragments of Egyptian blue pigment.

Experimental Set up



We need a source of Visible only-light and the camera set up for IR photography.

References

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Publications on Infrared Fluorescence photography (IRF)

A. Cosentino "Infrared Technical Photography for Art Examination" e-Preservation Science, 13, 1-6, 2016.

A. Cosentino "Identification of pigments by multispectral imaging a flowchart method" Heritage Science, 2:8, 2014.

A. Cosentino, S. Stout "Photoshop and Multispectral Imaging for Art Documentation" e-Preservation Science, 11, 91–98, 2014.

A. Cosentino "Effects of Different Binders on Technical Photography and Infrared Reflectography of 54 Historical Pigments" International Journal of Conservation Science, 6 (3), 287-298, 2015.

Training Programs

Interested in our methods for Art examination? Attend our Training programs! We offer training programs in Italy or delivered abroad to your institution.
CLICK HERE to learn more how to participate.