



Infrared Photography -- In infrared photography the film or image sensor used

is sensitive to infrared light. The part of the spectrum used is referred to as near-infrared to distinguish it from far-infrared, which is the domain of thermal imaging. Wavelengths used for photography range from about 700 nm to about 900 nm. Film is usually sensitive to visible light too, so an infrared-passing filter is used; this lets infrared (IR) light pass through to the camera, but blocks all or most of the visible light spectrum (the filter thus looks black or deep red). ("Infrared filter" may refer either to such a filter or to one that blocks infrared but passes other wavelengths.)

When these filters are used together with infrared-sensitive film or sensors, very interesting "in-camera effects" can be obtained; **false-color or black-and-white images with a dreamlike or sometimes lurid appearance known as the "Wood Effect,"** an effect mainly caused by foliage (such as tree leaves and grass) strongly reflecting in the same way visible light is reflected from snow. There is a small contribution from chlorophyll fluorescence, but this is marginal and is not the real cause of the brightness seen in infrared photographs. The effect is named after the infrared photography pioneer Robert W. Wood, and not after the material wood, which does not strongly reflect infrared.

The other attributes of infrared photographs include very dark skies and penetration of atmospheric haze, caused by reduced Rayleigh scattering and Mie scattering, respectively, compared to visible light. The dark skies, in turn, result in less infrared light in shadows and dark reflections of those skies from water, and clouds will stand out strongly. These wavelengths also penetrate a few millimeters into skin and give a milky look to portraits, although eyes often look black.

Digital camera sensors are inherently sensitive to infrared light, which would interfere with the normal photography by confusing the autofocus calculations or softening the image (because infrared light is focused differently from visible light), or oversaturating the red channel. Also, some clothing is transparent in the infrared, leading to unintended (at least to the manufacturer) uses of video cameras. Thus, to improve image quality and protect privacy, many digital cameras employ infrared blockers. Depending on the subject matter, infrared photography may not be practical with these cameras because the exposure times become overly long, often in the range of 30 seconds, creating noise and motion blur in the final image. However, for some subject matter the long exposure does not matter or the motion blur effects actually add to the image. Some lenses will also show a 'hot spot' in the centre of the image as their coatings are optimized for visible light and not for IR.

An alternative method of DSLR infrared photography is to remove the infrared blocker in front of the sensor and replace it with a filter that removes visible light. This filter is behind the mirror, so the camera can be used normally - handheld, normal shutter speeds, normal composition through the viewfinder, and focus, all work like a normal camera. Metering works but is not always accurate because of the difference between visible and infrared reflection. When the IR blocker is removed, many lenses which did display a hotspot cease to do so, and become perfectly usable for infrared photography. Additionally, because the red, green and blue micro-filters remain and

have transmissions not only in their respective color but also in the infrared, enhanced infrared color may be recorded.

Since the Bayer filters in most digital cameras absorb a significant fraction of the infrared light, these cameras are sometimes not very sensitive as infrared cameras and can sometimes produce false colors in the images. An alternative approach is to use a Foveon X3 sensor, which does not have absorptive filters on it.

Step by Step Procedure for Infrared Photography for the Sample Images Using an Infrared Camera

The following procedure is written for

1. Specialized cameras and modified DSLR cameras with filters are used. It's best to consult the camera's user guide to find the settings, filters, and accessories appropriate for taking infrared images. This discussion will give typical example instructions for an infrared digital camera in reference to the sample images.
2. These instructions are now UNDER CONSTRUCTION. Please come back soon!