UVP
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PHOTOGRAPHING FLUORESCENT MINERALS WITH MINERALIGHT AND BLAK-RAY LAMPS

Taking pictures in ultraviolet light of fluorescent minerals is a relatively simple operation if one follows certain basic requirements and understands the several variables that control what is obtained on the picture.

There are several factors that control obtaining the best picture and among these are the size of power of the ultraviolet light source, the distance of the light source to the subject, the type of film used, the fluorescent color of the mineral specimen, the type of filter on the camera, and the final exposure of the picture. These subjects are taken up below in order.

The size of the light source will make a difference as far as the picture is concerned because the more powerful the light source, the shorter the exposure. The distance of the ultraviolet light to the subject is also of great importance for the closer the light source is to the subject being photographed, the brighter the fluorescence will be and the shorter exposure required. While tubular light sources do not vary according to the so-called square law, nevertheless, moving the light source into one-half of its original distance will more than double the light intensity with corresponding increase in fluorescent brightness. It is important to remember that the distance of the light source to the mineral is the important factor, not the distance of the camera to the mineral. It makes very little difference within rather wide limits, as to how far the camera is from the mineral.

It is presumed that photography of fluorescent minerals in ultraviolet will be done with color film in order to achieve a picture of the true beauty of the mineral. There is very little advantage of taking pictures of fluorescent minerals in black and white. There are many types of color film available but tests have shown that Kodachrome Daylight Film is superior to all others of the small type films. This has a wide spread of exposure for satisfactory pictures and gives more accurate color rendition than most other films. In larger films of the sheet type, Ektachrome Daylight Type will be found very satisfactory. Please note that any exposure recommendations given are for Kodachrome 2 with an ASA index of 50. Exposures would have to be calculated for the faster films of the sheet type.

The fluorescent color of specimens being photographed has some effect on the exposure required. It has been found that specimens that fluoresce red and/or green, like minerals from Franklin, New Jersey, require a shorter exposure than those which fluoresce blue, such as Sheelite. Blue fluorescent minerals often require twice as much exposure as other colors.

The filter selected to go over the camera lens is of greater importance and an attempt to take photographs of fluorescent subjects without such a filter will be worthless. The filter of choice for almost all fluorescent photographs is made by Eastman Kodak Company and is called the Wratten 2A filter although 2B type filters will serve if 2A is not available. This filter is able to transmit all fluorescent colors very well but cut off the ultraviolet so it does not reach the film and overexpose it. Unfortunately, the camera can see ultraviolet even if we can't an

overexposure will ruin the picture. As 2A filters are not always stocked by every camera store, it may be necessary to go to a large camera store or have the filter ordered for you. With certain types of fluorescent colors, it is possible to use a different filter in order to photograph the specimen in true color. This especially is true with long wave ultraviolet photography as most filters on longwave ultraviolet lamps transmit more deep violet visible light than do filters on shortwave lamps. This visible light may be reflected from the specimen and the color of the specimen modified by it. Thus, a specimen of orange fluorescing Sphalerite may go toward a whitish tinge because of the blue reflection. This reflection can be eliminated and all of the orange or yellow color obtained by using a yellow filter such as the common K2 filter. This filter will work for any mineral that is all orange, yellow, or green without any other colors in it.

The final exposure of the picture is dependent on most of the above factors. As a rule of thumb, it is often better to use smaller "f" stops and a longer time of exposure to avoid errors through inaccuracies of time measurement. With a long exposure, a few seconds either way makes very little difference.

Typical examples of exposure that have given satisfactory pictures were achieved with the following conditions: two large shortwave ultraviolet sources like the XX-15 Mineralight Lamp, each mounted 18 inches away from the subject. Kodachrome 2 film was used, of the daylight type, and all colors of specimens were photographed. The filter was a Wratten 2A. Thus, with an f number of 16, exposures varied from 24 to 96 seconds with most exposures being satisfactory at 48 seconds. If two smaller Mineralight Lamps had been used at a distance of six or eight inches away from the subject, exposure time might be increased by as much as four times.

It is important to remember that there is no meter commonly available to measure the light given off by fluorescent subjects. Thus, it is necessary for the photographer to gain some experience in taking photographs under these conditions. These conditions should then be more or less standardized and a picture taken at the expected exposure. Two other pictures should be taken of shorter and longer exposure to bracket the exposure thought to be best.

With the above cautions and advice in mind, the interested photographer should be well able to take pictures of fluorescent minerals and gain excellent results in colorful slides and pictures.