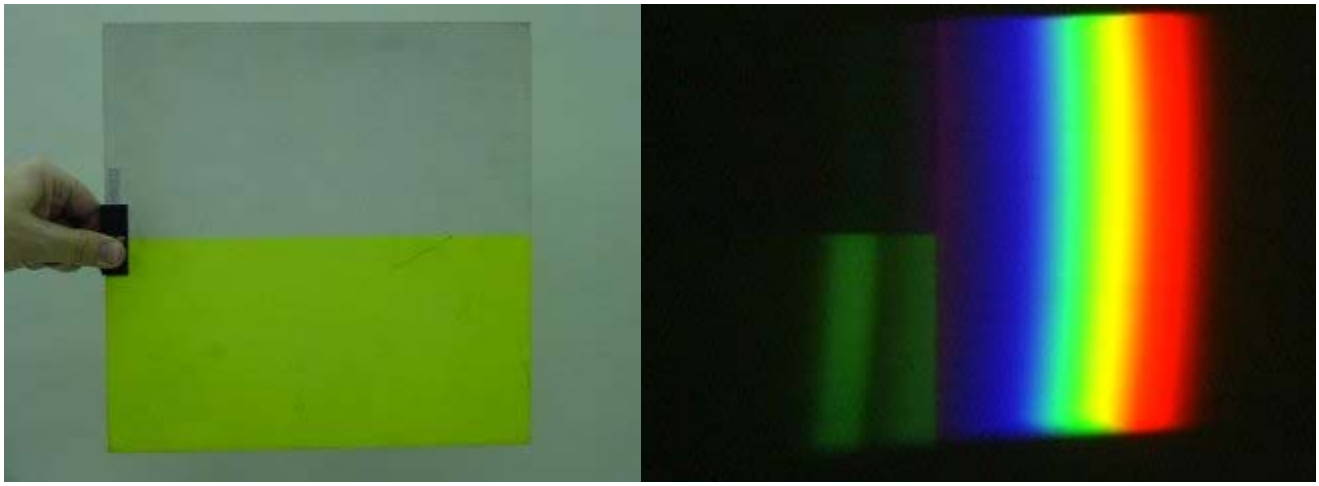
Question #246

The spectrum of a carbon arc lamp includes not only the visible "spectral colors," but also a significant amount of ultraviolet and infrared. This UV radiation is rendered visible as light green bands in the spectrum photograph at the right below, using a screen that is coated with a fluorescent material called fluorescein. A photograph of the screen, with the upper half painted a standard white and lower half covered with fluorescein dye, is shown at the left. Both photographs are at the same scale, so simply moving the screen to the right will produce the configuration shown in the spectrum photograph at the right. Notice that the UV light is not visible on the top section of the screen, which is coated with the standard white paint. The edge of the screen is seen as the vertical line, just to the left of the spectral blue, where the green UV response ends.



Now suppose that the screen with the fluorescein coating is slowly moved across the visible part of the spectrum in order of decreasing frequency (or increasing wavelength): blue, cyan, green, yellow, orange, and red. What color will the fluorescein emanate as the screen is moved into the spectrum?

Here are a few suggestions:

- (a) it will be black, because the visible radiation is not as powerful as UV.
- (b) It will be green until it gets to the spectral green, then black.
- (c) It will be green until it gets to the spectral green, then the same as the spectral colors.
- (d) It will be the color of the spectrum. because the visible radiation is not as powerful as UV.

Click here for Answer #246 after March 27, 2006.

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For questions and comments regarding the *Question of the Week* contact Dr. Richard E. Berg by e-mail or using phone number or regular mail address given on the Lecture-Demonstration Home Page.