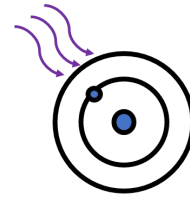


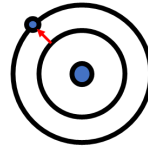
## Case 14: Fluorescent Minerals

### What is fluorescence?

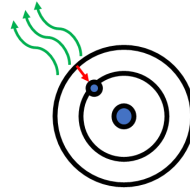
Fluorescence is a glow, or emission of light, by a material when it is exposed to a particular type of light. Fluorescent minerals contain activators; when these atoms are excited by ultraviolet light (which is radiation in particular wavelengths), they almost immediately re-emit the radiation in wavelengths that are seen as visible light. Some examples of minerals that have fluorescence are fluorite, calcite, rubies, and diamonds. But not all specimens of a particular mineral type will fluoresce, so fluorescence is not a diagnostic mineral property.



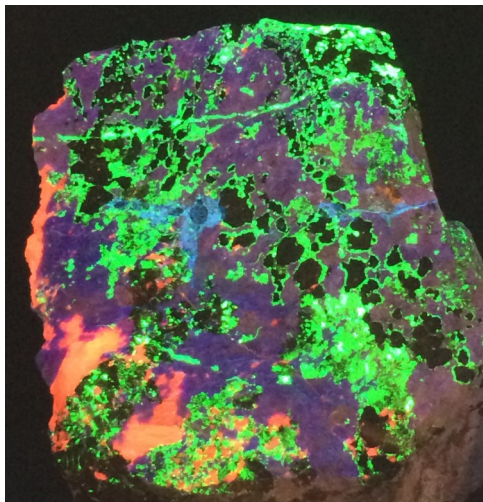
1.) Electron in ground state absorbs ultraviolet light



2.) Electron is excited, "jumps" up an energy level



3.) Electron returns to ground state, energy is emitted in the form of visible light

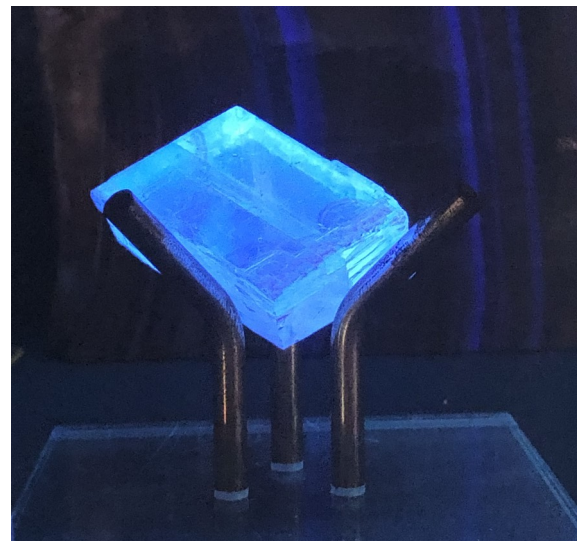


### Why do minerals fluoresce different colors?

For many minerals to fluoresce, they need small amounts of impurities to serve as the activators. Different colors can be produced by different activators. Fluorite usually fluoresces a blue-violet color, although it can sometimes glow in white or cream. Calcite has multiple colors of fluorescence including red, pink, orange, green, blue and white.

### What is phosphorescence?

Phosphorescence is typically understood as the emitted light persisting after the end of the excitation. In other words, the glow continues after the ultraviolet radiation is removed. A more accurate, but more technical definition, is that there is a change in atomic behavior that does not happen in fluorescent materials. The rectangular calcite specimen on the top shelf is a good example of phosphorescence.



Bruce Dice  
**MINERALOGICAL MUSEUM**

**Information from:**

**Mindat.org** – The world's largest online mineral database.

**“Rock and Gem: The definitive guide to rocks, minerals, gemstones, and fossils”** by Bonewitz, R. and the Smithsonian Institute, New York, NY: Dorling Kindersle. 2008.

**“Simon and Schuster's Guide to Rocks and Minerals”** – edited by Martin Prinz, George Harlow, and Joseph Peters. New York: Simon and Schuster, 1978.

\*available for reference in the Dice Mineralogical Museum

6/10/2022

By Jillian Herlinger (Dice Scholar / Museum  
Curator 2021-2022)