

## Introduction

Light is a form of energy. To create light, another form of energy must be supplied. One of the two common ways for this to occur is called luminescence. (Read about the second way, incandescence in NS D2 – More About Light)

Luminescence is caused by electrons changing energy levels. It is often referred to as "cold light", light which can take place at lower temperatures. In luminescence, some energy source (we will use ultraviolet, nonvisible light) kicks an electron of an atom out of its "ground" (lowest-energy) state into an "excited" (higher-energy) state; then the electron gives back the energy in the form of visible and light the electron then can fall back to its "ground" state.

Fluorescence is luminescence in which the energy is supplied by a "black light" or UV light. In this LAD you will observe fluorescence in minerals. The minerals will be caused to fluoresce by exposure to the ultraviolet light.

## Mineral Procedure

1. Observe the minerals under the regular white lights. Record their color on your data table below.
2. Turn the lights off in the room and observe their fluorescent color while being exposed to ultraviolet light (aka "black" light). Record the results on your data table below.
3. Observe minerals #1 & #5 while striking these two minerals together and observe. (This form of luminescence has a special name. Read about it on your NS D2 – More about Light.)

## Mineral Data/Results

	Common Name	Color in white light	Color under the UV light	Origin of the mineral
1	Tremolite $\text{Ca}_2(\text{Mg,Fe})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$			Balmat, New York
2	Sodalite $\text{Na}_4(\text{Si}_3\text{Al}_3)\text{O}_{12}\text{Cl}$			Mont Saint-Hilaire, Quebec
3	Fluorite $\text{CaF}_2$			Clay Center, Ohio
4	Wernerite $\text{NaAlSi}_3\text{O}_8$			Greenville, Quebec
5	Tiroidite $\text{Mn}_2(\text{Mg,Fe})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$			Talcville, New York
6	Calcite $\text{CaCO}_3$			Mexico

## Dye Procedure

1. Observe the solutions under white light and record their color
2. Then observe them under the "black" light, and record their color.

## Dye Data/Results

	Color in white light	Color under the UV light
1		
2		
3		
4		
5		