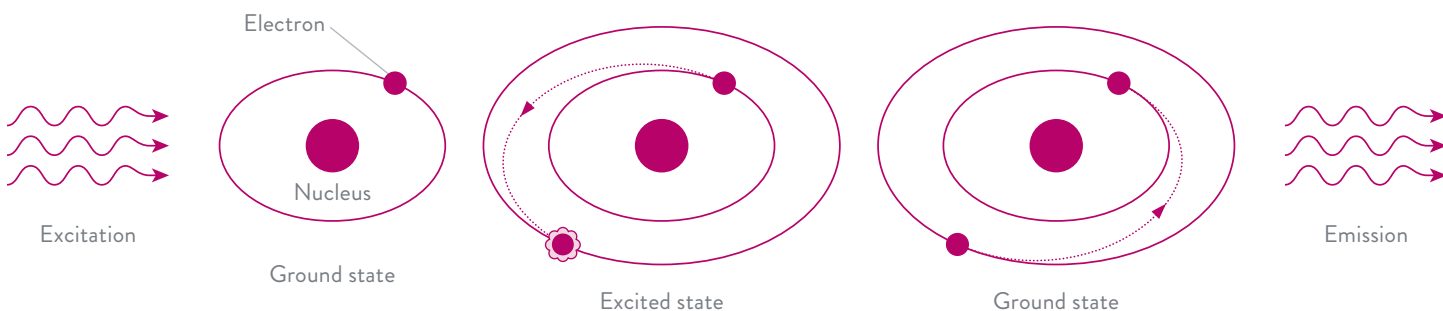


## Chemilumi... what?

What makes things glow in the dark? In this lab, you will explore the concept of luminescence, light energy produced from other forms of energy, specifically, bioluminescence, chemiluminescence, and fluorescence. And you will discover how chemiluminescence can be harnessed as a powerful tool for scientists.

### LIST OF MATERIALS

- PROTECTIVE EYE WEAR
- PROTECTIVE GLOVES
- 3 BEAKERS
- 125 ML DISTILLED WATER
- 1/4 TEASPOON LUMINOL
- 1 TEASPOON POTASSIUM HYDROXIDE
- 100 ML HYDROGEN PEROXIDE
- 1/8 TEASPOON POTASSIUM FERRICYANIDE



### 1 What glows in the dark?

Luminescence, unlike fire, is “cold light” that can be emitted at normal and lower temperatures. In luminescence, some energy source kicks an electron of an atom out of its lowest energy “ground” state into a higher energy “excited” state. Then the electron returns the energy in the form of light so it can fall back to its “ground” state. With few exceptions, the excitation energy is always greater than the energy (wavelength, color) of the emitted light.

MAKING IT GLOW	DEFINITIONS AND EXAMPLES
<b>BIOLUMINESCENCE</b>	The biochemical emission of light by living organisms. <b>Examples:</b>
<b>FLUORESCENCE</b>	The visible or invisible light given off by certain substances when exposed to ultraviolet (UV) light. <b>Examples:</b>
<b>CHEMILUMINESCENCE</b>	The emission of light during a chemical reaction that does not produce a lot of heat. <b>Examples:</b>

## 2 Luminol experiment

Take the information you have learned about chemiluminescence and apply it to your own experiment using the chemical luminol. Follow the instructions and record your observations in the chart below.

Time to put on your safety glasses and gloves!

LUMINOL EXPERIMENT	SOLUTION	OBSERVATIONS
BEAKER A	<ul style="list-style-type: none"> <li>• 125 ml distilled water</li> <li>• 1/4 teaspoon luminol</li> <li>• 1 teaspoon potassium hydroxide</li> </ul>	
BEAKER B	<ul style="list-style-type: none"> <li>• 100 ml hydrogen peroxide</li> <li>• 1/8 teaspoon potassium ferricyanide</li> </ul>	

Write your prediction here:

### REACTION

What will happen when you combine solutions from Beaker A and Beaker B?

Write your observations here:

Is this an example of bioluminescence, chemiluminescence or fluorescence?

What is one thing scientists can detect using chemiluminescence?