

Forensic Glow-Blood System



Introduction

You arrive at a crime scene only to find that all of the blood that may have been present has dried and is no longer visible. How can you determine if and where the blood is present? In this activity, a chemiluminescent blood detection solution similar to those actually used by forensic scientists will be used to detect the presence of simulated blood.

Concepts

- Forensics
- Chemiluminescence
- Bloodstain patterns

Materials

Luminescent blood detection solution, 400 mL	Gauze, cloth or other absorbent material (optional)
Hydrogen peroxide, 6%, 10 mL	Graduated cylinder, 10-mL (optional)
Simulated blood sample, luminescent, 200 mL	Spray bottle (optional)

Safety Precautions

Wear chemical splash goggles, chemical-resistant gloves and a chemical-resistant apron. The luminescent blood detection solution, hydrogen peroxide solution and simulated blood solution should be used in a centralized location. Avoid all body tissue contact. Please review current Safety Data Sheets for additional safety, handling, and disposal information. No real blood or blood products are involved in the solutions used in the activity.

Preparation

Before beginning the activity, pour 10 mL of 6% hydrogen peroxide into a bottle containing 400 mL of luminescent blood detection solution. Swirl gently.

Procedure

1. Place droplets of the simulated blood solution on a piece of gauze, cloth or other absorbent material. A red cloth works well to “disguise” the location of the blood. The simulated blood sample may be sprayed onto the absorbent material to obtain a splatter effect if desired.
2. Darken the room as much as possible. The ideal location to perform this demonstration/experiment is in a completely dark room (such as a closet). However, luminescence will also be observed in a darkened laboratory.
3. Demonstrate, or have students find, the location of the simulated blood by placing or spraying the prepared activated luminescent blood detection solution onto and around the centralized areas of suspected blood contamination.
4. A bright blue glow will be seen where the simulated blood is present.

Disposal

Please consult your current *Flinn Scientific Catalog/Reference Manual* for general guidelines and specific procedures, and review all federal, state and local regulation that may apply, before proceeding. The reacted samples may be disposed of according to Flinn Suggested Disposal Method #26b.

Tips and Extensions

- The activity is available as a kit from Flinn Scientific: Forensic Glow—Blood System Demonstration Kit (Catalog No. AP6292).
- The luminescent blood detection solution and simulated blood samples may be used in a variety of ways. Be creative and set up an entire crime scene or add this activity to your current Forensics unit. The luminescent blood detection solution may also be placed into a spray bottle (Catalog No. AP5338) and sprayed onto suspected areas saturated with simulated blood.
- The luminescent blood detection solution, when activated, has a shelf life of several weeks.
- The luminescent blood detection solution will actually work on real blood samples. However, due to health risks associated with real blood, it is suggested that actual blood samples not be used.

Discussion

Violent crimes often result in bloodshed, which may leave bloodstains at the scene of a crime as well as on clothing, weapons, and other objects. Locating this blood can be vital in determining the events that occurred at a crime scene. The positions and movements of a victim at the time the crime occurred can usually be determined by specific blood patterns. A complete reconstruction of a crime scene is sometimes possible due to the location of blood. Bloodstain evidence can also refute or support statements from witnesses or the accused in a court of law.

The luminescent blood detection solution provided in this activity is very similar to solutions used by forensic scientists to detect the presence of blood at crime scenes. When the simulated blood samples are sprayed with activated blood detection solution, a blue glow appears. This glow is seen due to a phenomenon known as chemiluminescence. *Chemiluminescence* is the emission of light as a result of a chemical reaction. When in contact with the activated luminescent blood detection solution, the simulated blood sample acts as a catalyst for the chemiluminescent reaction. The ions in the luminescent blood detection solution become activated to an excited state. As the ions relax back to their ground state, a photon in the visible region of the spectrum (~425 nm) is released. The emitted photons are seen as a glowing blue light.

The *Forensic Glow-Blood System* is available from Flinn Scientific, Inc.

Catalog No.	Description
AP6292	Forensic Glow—Blood System Demonstration Kit
AP5338	Spray Bottle

Consult your *Flinn Scientific Catalog/Reference Manual* for current prices.