

Luminol Reaction

Chemicals and Equipment Needed

For Solutions:

- Luminol:
 - Luminol – **prep lab fridge**
 - NaHCO_3 – **G1**
 - Na_2CO_3 – **G1**
 - $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ – **F1**
- Dilute H_2O_2 solution
 - 30% H_2O_2 – **K3**
- 2 L beaker - **Q1**
- Stir bar and plate– **U1/A4**
- 1 L graduated cylinder – **Q4**

For Demonstration:

- Dedicated Luminol and H_2O_2 bottles – **H5**
- Glass spiral – **J1**
- 2- 500 mL Erlenmeyer flasks – **P1**
- 2- 400 mL beakers – **Q2**
- 2 plastic petri dishes – **P3**

Optional:

- Fluorescent dyes – **N2**
 - Rhodamine B – purple
 - Fluorescein – green

Preparation of Solutions

- **Luminol:**
 - Measure out the following:
 - 0.2 g luminol
 - 24.0 g NaHCO_3
 - 4.0 g Na_2CO_3
 - 0.4 g $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
 - Add all compounds (except NaHCO_3) to a mortar and pestle and grind, then transfer to a 2 L beaker. Add the NaHCO_3 . Add 800 mL d- H_2O and stir with a stirplate until dissolved. This may take 30 minutes. After the solids have dissolved, **dilute to 1 L** and pour into dedicated bottle.
 - **DO NOT HEAT!**
- **H_2O_2 :**
 - Fill 1 L graduated cylinder with 500 mL d- H_2O . Measure out 5 mL 30% H_2O_2 , add to cylinder. Dilute to final volume of 1 L and pour into dedicated bottle.
- Test the solutions by mixing ~100 mL of each in a beaker with the lights off.

Preparation of Demonstration

- Set glass spiral on cart or table and place Erlenmeyer flask underneath spout (leave an extra flask)
- Label beakers and lids as **luminol** and **H_2O_2** , fill with ~250 mL of each solution

Presentation

- Turn out or dim lights, then slowly pour the contents of the beakers simultaneously into funnel.

Clean up

- Pour solutions down sink with plenty of water
- Set the empty flask under the spiral, and rinse with 0.5 L d H_2O in small increments, or 1 M acetic acid if you see buildup or staining. Wipe outside with wet paper towel on a regular basis

Optional Prep with fluorescent dyes

- To dye the luminol, add a very very very small amount of the desired fluorescent dye to the luminol solution before presentation.

NOTES:

- The original protocol said to make both solutions fresh every time, but the solutions keep for a week or more. Even old solutions will glow, but the glow does not last long.
- For an alternate presentation, see **Luminol Ammonia Fountain**

Luminol for Murder Mystery

Chemicals and Equipment Needed

For Solutions:

- d-H₂O
- Luminol – prep lab fridge
- NaOH – G2
- 30% H₂O₂ – K3
- 600 mL beaker – Q2
- 10 mL graduated cylinder – Q3
- 100 mL graduated cylinder – Q3
- 2-25 mL graduated cylinder – Q4
- Stir bar and plate– U1/A4

For Demonstration:

- Dedicated spray bottle
- Animal blood
- K₃[(CN)₆] – F5
- Black felt with secret message
 - Might be in D

Preparation of Solutions

- **Luminol:**
 - Measure out the following:
 - 0.2 g luminol
 - 2g NaOH
 - Add all compounds to a mortar and pestle and grind, then transfer to the larger beaker. Add 200 mL d-H₂O and stir with a stirplate until dissolved. This may take 30 minutes. After the solids have dissolved, dilute to 250 mL. **DO NOT HEAT!**
- **H₂O₂:**
 - Fill the 100 mL cylinder halfway with d-H₂O. Add 10 mL 30% H₂O₂, dilute to 100 mL
- ~30 min before class, mix 20 mL of each solution in the spray bottle. The solution will get warm, so it's best to leave the top off of the spray bottle until delivery.

Presentation

- Spray the luminol on samples of animal blood, a sample of potassium ferricyanide solution, or the prepared felt (the message reads "U R NEXT")
 - The message fades very fast

Clean-up

- Pour down the drain with plenty of water

NOTES:

- No one has ordered this in a long time. Dr Pappas used to use it for her "Murder Mystery" class