

**University of Utah
Chemistry Demonstration:**

Burning Metals (perfected!)

Reagents:

Methyl Alcohol (MeOH)

Metals: (~5 g each)

- NaBr
- Boric Acid (H_3BO_3)
- CuCl_2
- LiCl
- KCl

SAFETY

MeOH..... flammable

- Remove all flammable materials within 10 ft. Choose a non-flammable surface. Locate sources of ignition (open flame or source of sparks) up to 10-20 ft. away. Keep in mind that flammable vapors are often more dense than air and travel close to the ground.
- Bring the fire extinguisher and locate closest safety shower or sink.
- Be sure that the audience is at a safe distance from the table (at least 5 feet away).
- Do not perform this demo directly below a fire sprinkler.

Preparation:

The metals might already be prepared and added to spray bottles, but if not add ~5 g of each metal to ~100 mL of MeOH in individual spray bottles.

Instructions:

Before you begin, prep each bottle by spraying the bottle to ensure the solution will spray smoothly. Make sure the torch is secured so it cannot tip over. Once the bottles are ready, light the torch and spray each metal into the flame from a few feet back. Make sure you keep a lighter close by so you can relight the torch if it goes out when you spray the metals. Be sure not to spray towards the direction of the audience.

- NaBr \Rightarrow orange
- Boric Acid (H_3BO_3) \Rightarrow green
- CuCl_2 \Rightarrow blue green
- LiCl \Rightarrow hot pink
- KCl \Rightarrow violet

When you are finished, rinse out each spray nozzle to prevent clogging and close tightly.

Clean up: Wipe up the metals from the table surface. You should have nothing for disposal. Bring excess metals back and keep in spray bottles.

The purpose of a flame test is to detect for different metals present. Each metal will produce different colors when sprayed through the flame.

