

Atomic Absorption and Emission

TARGET: I can explain how energy is absorbed or released when electrons move from one energy level to another

ABSORPTION

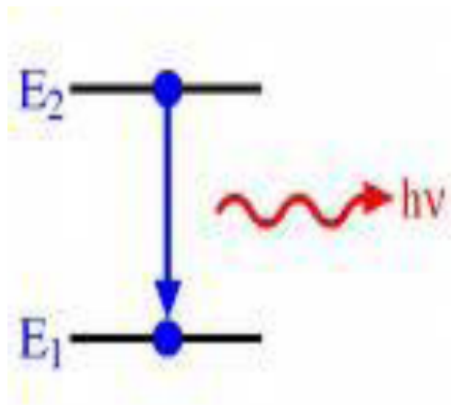
- If you give an atom energy the electron can go up to a higher energy level



ADD TO IT

EMISSION

- After putting energy into an atom and raising an electron to a higher level, it wants to fall back down to a lower energy level.

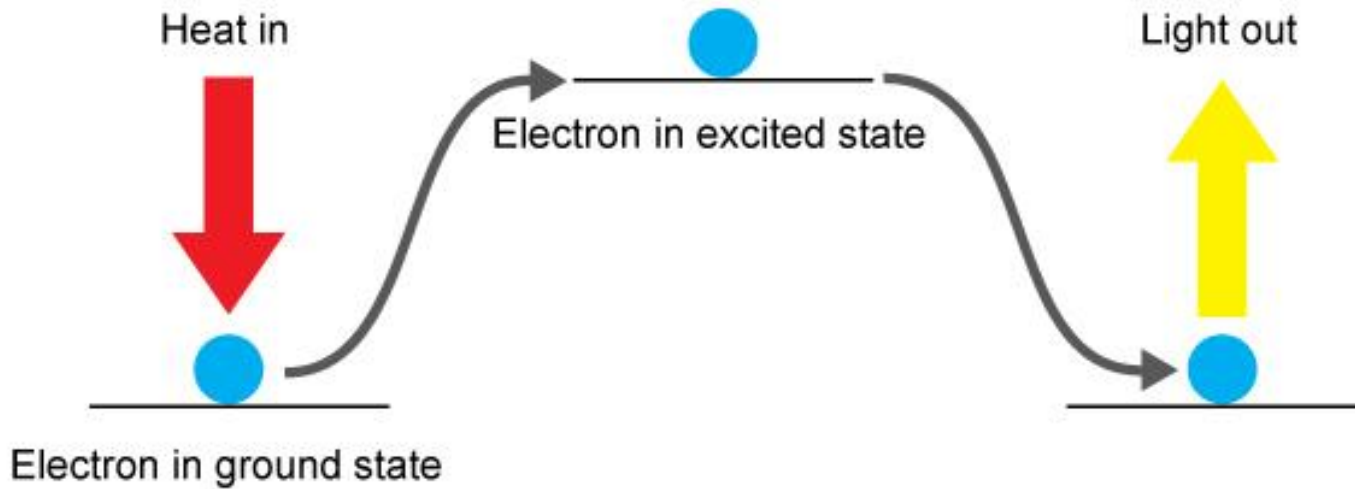


$(h\nu = \text{energy})$

ADD TO IT

Energy given off during emission:

- When energy is released during emission it can *sometimes* be seen as LIGHT.
- The energy and color of this light will change based on which element it is.
 - The amount of energy is different because the energy difference between different energy levels is not exactly the same for every level or every element.



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Flame Tests

Compounds containing lithium, sodium, potassium, calcium, and barium ions can be recognized by burning the compound and observing the colors produced

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The Bunsen Burner

Invented by Robert Bunsen in 1854 at the University of Heidelberg. Used in laboratories all around the world, the design has barely changed since early prototypes.

Flame types



Safety flame
temperature: 300°C
used to show the burner is on



Blue flame
temperature: 500°C
the most commonly used flame



Roaring blue flame
temperature: 700°C
a light blue flame appears in the centre



Flame test

A flame test is a procedure used in chemistry to detect the presence of certain elements, primarily metal ions, based on each element's characteristic emission spectrum.



Copper
Cu
(green)



Lithium
Li
(red)



Calcium
Ca
(brick red)

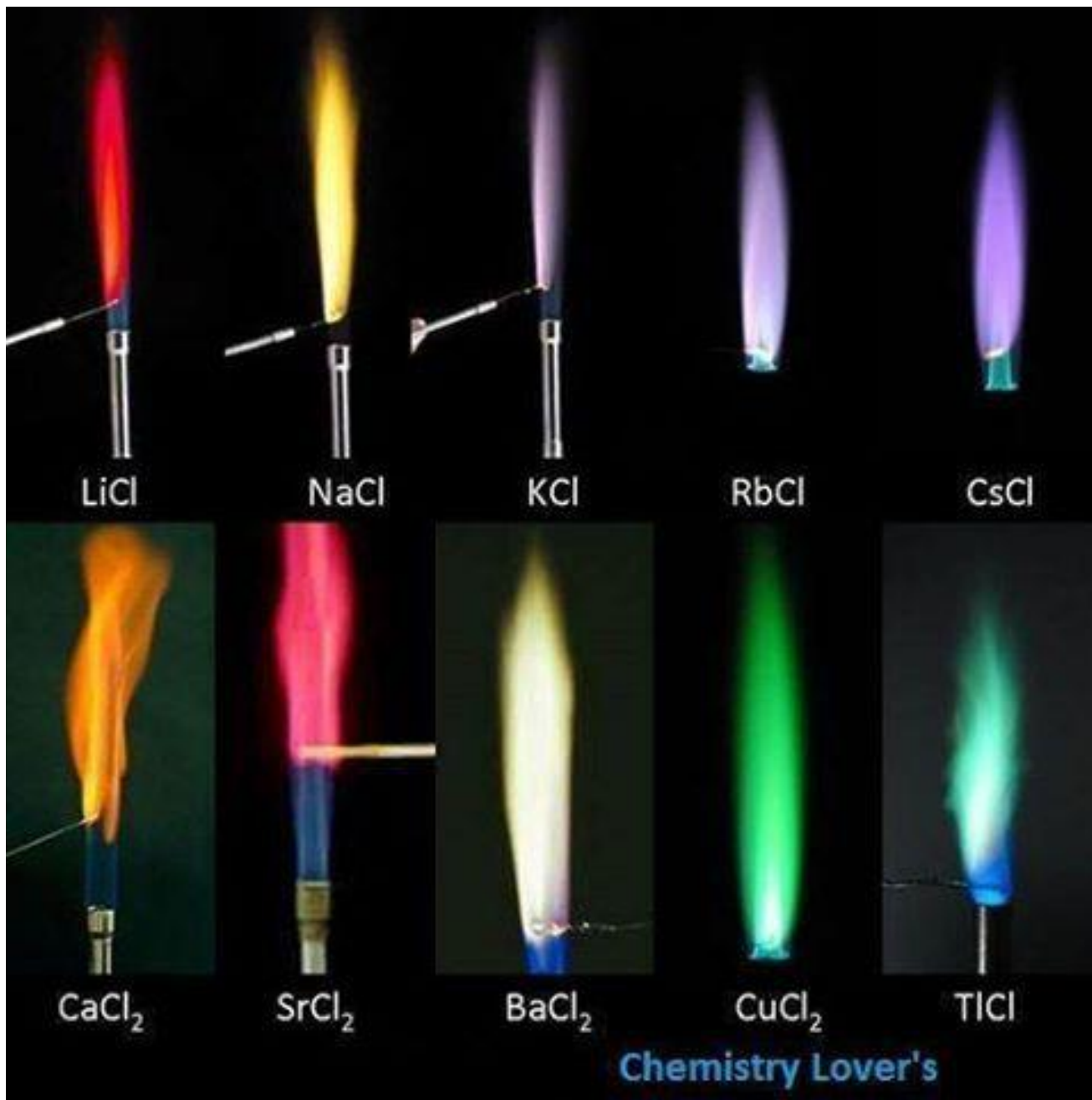


Potassium
K
(violet)

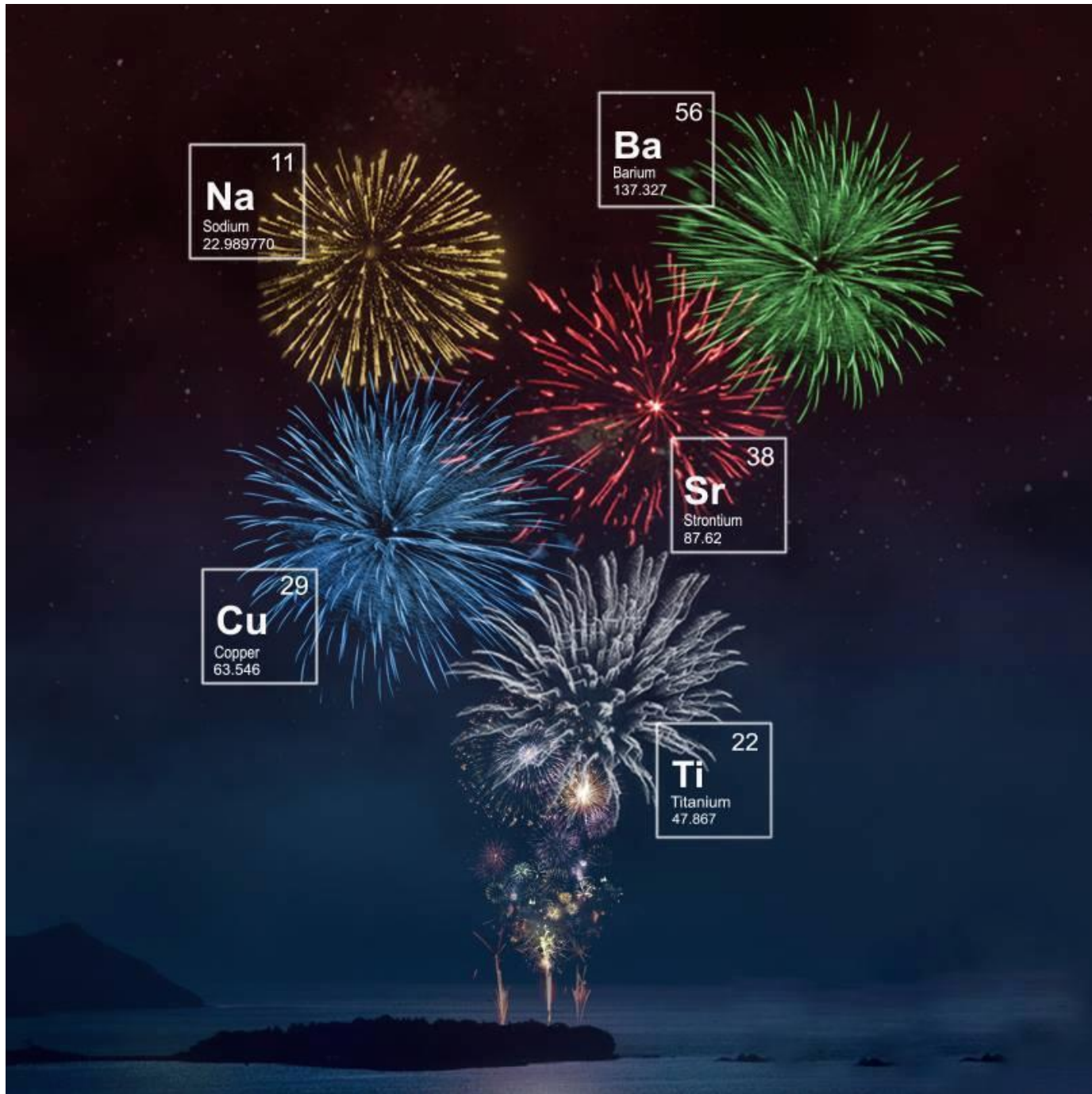
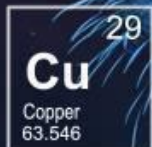
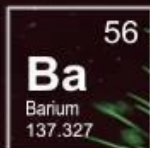
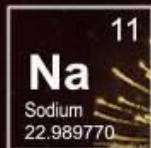


Magnesium
Mg
(bright white)





Chemistry Lover's



White



**aluminum or
magnesium**

Silver



**aluminum, magnesium
or titanium powder**

Blue



**copper chloride
or copper compounds**

Red



**strontium salts
or lithium salts**

Green



barium chloride

Yellow



sodium nitrate

Purple



**mix of strontium
and copper compounds**

Orange



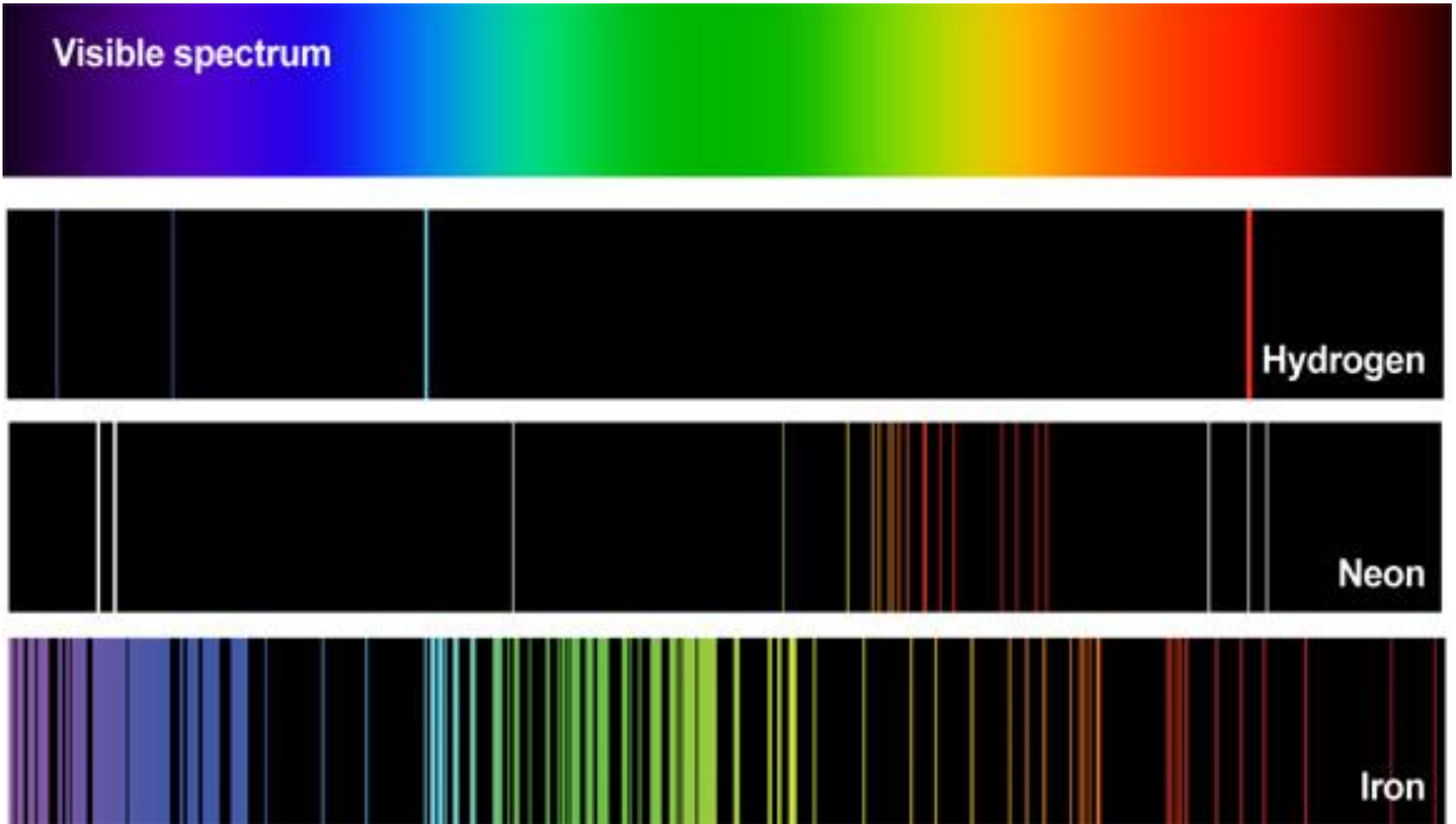
calcium chloride

Visible spectrum

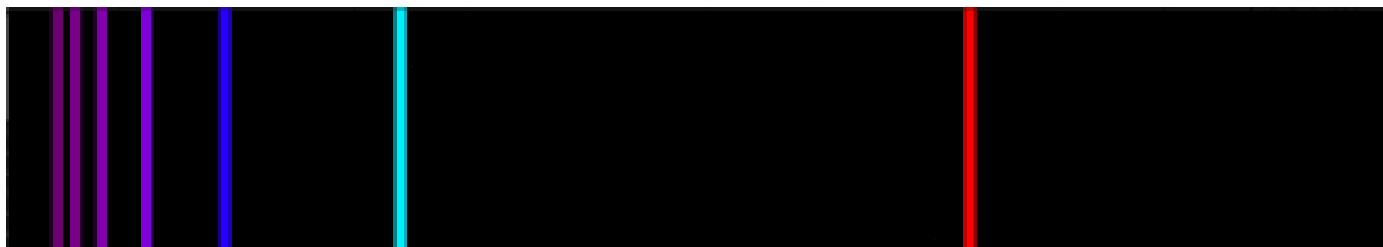
Hydrogen

Neon

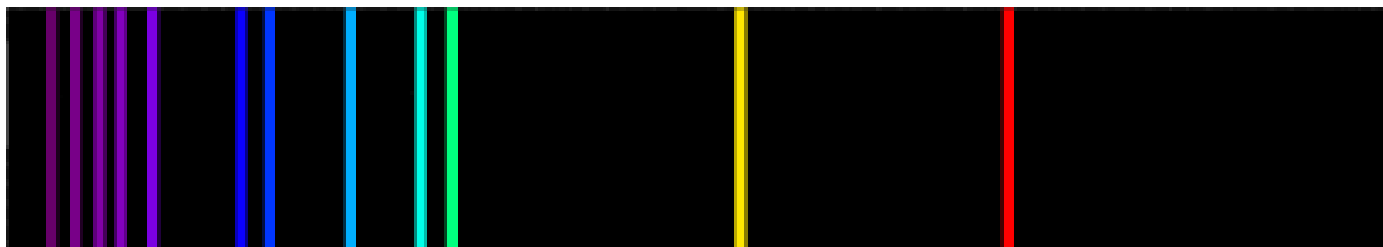
Iron



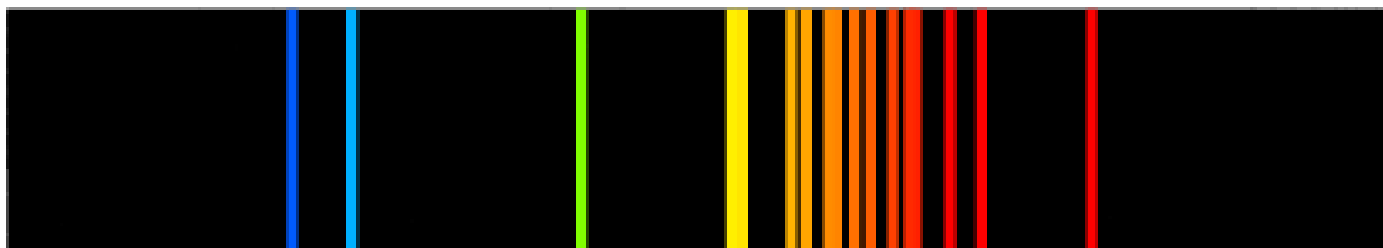
Hydrogen



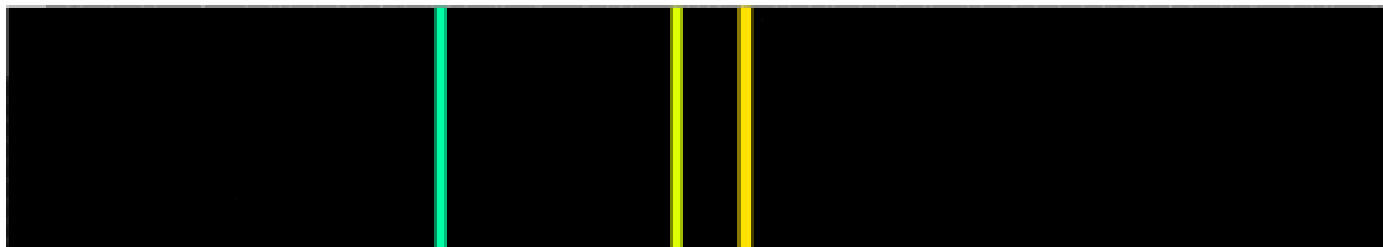
Helium



Neon



Sodium



Mercury

