Atomic Absorption and Emission

ABSORPTION

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

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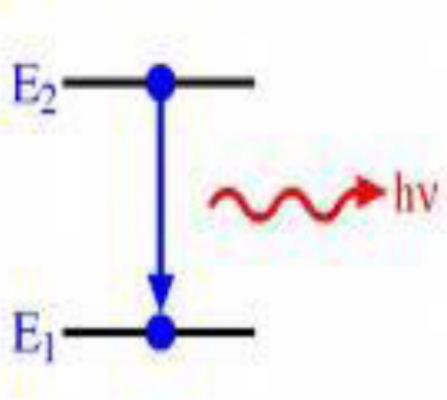
EMISSION

- **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.**



(hv = energy)

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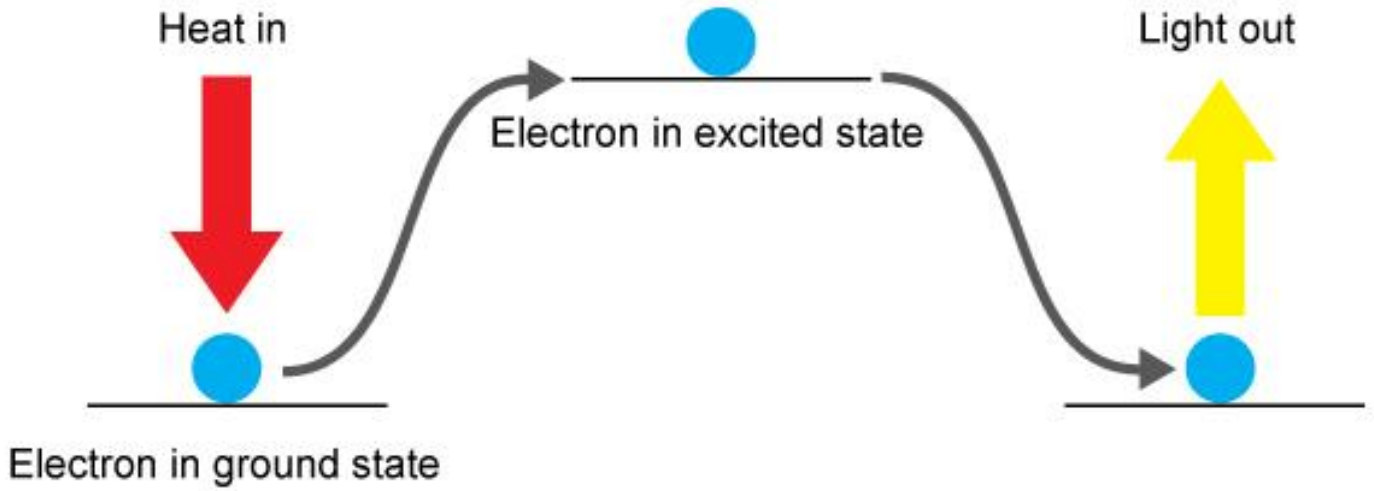
Energy given off during emission:

- 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

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: 300ºC
used to show the burner is on

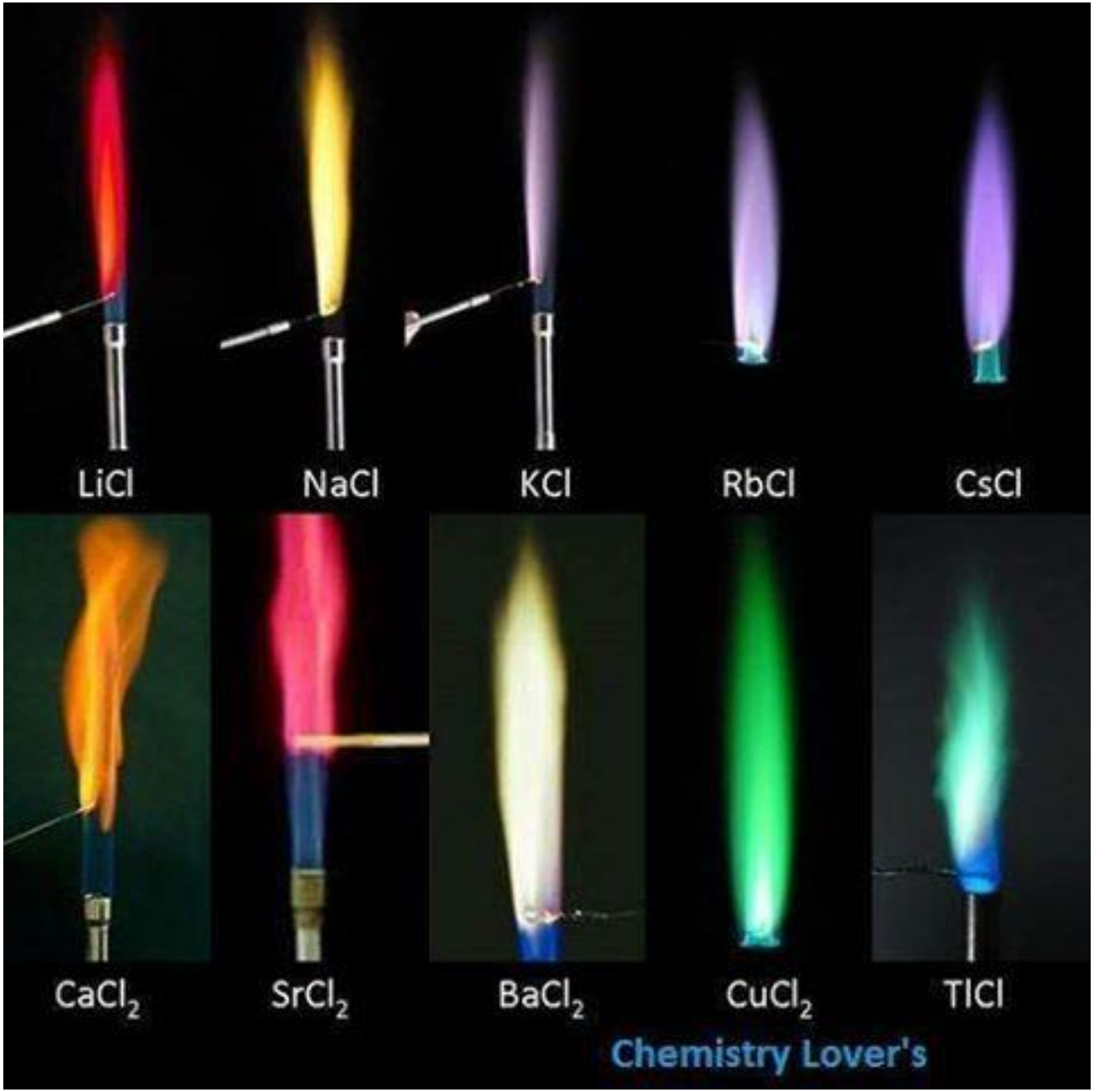
Blue flame
temperature: 500ºC
the most commonly used flame

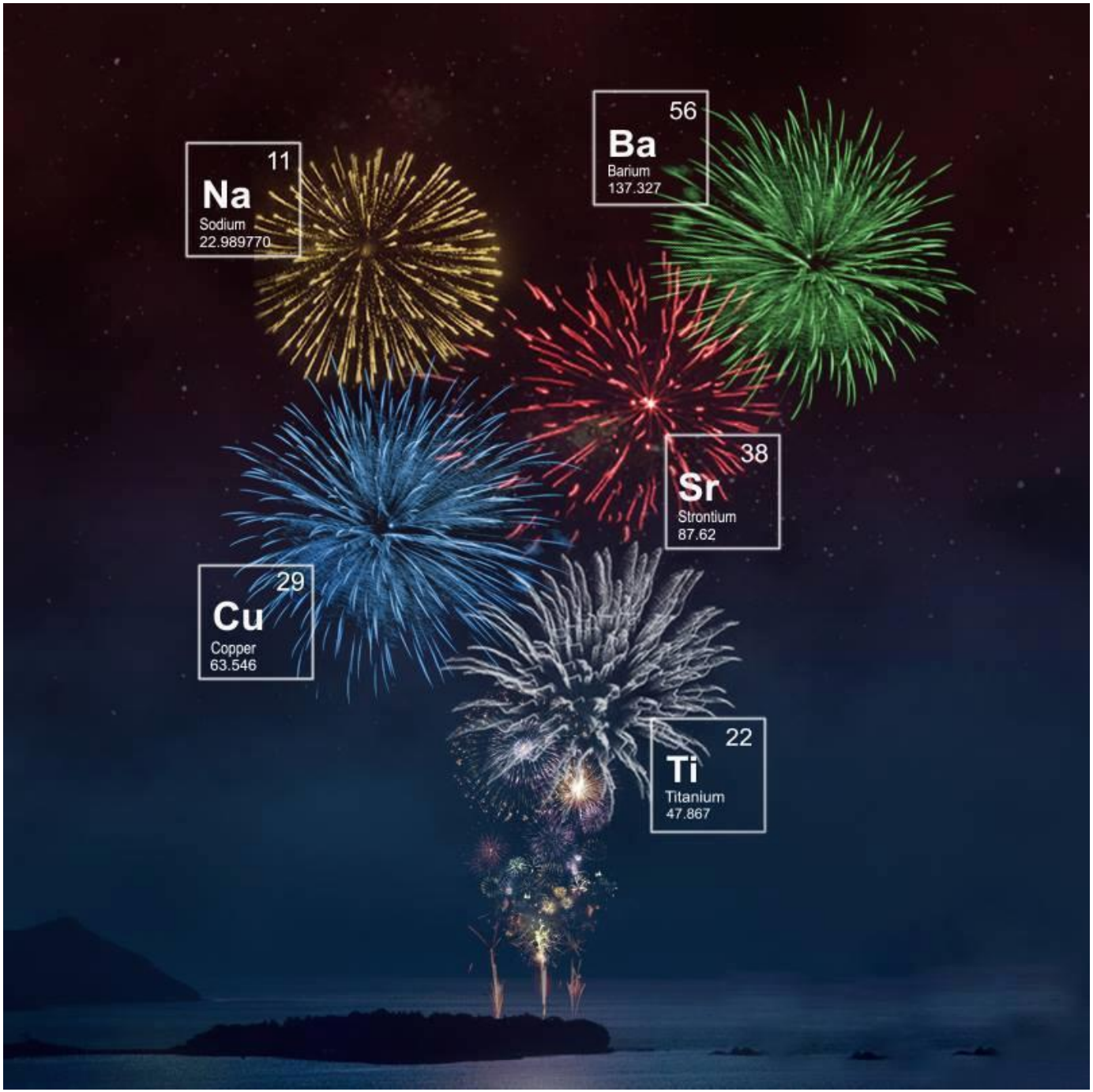
Roaring blue flame
temperature: 700ºC
a light blue flame appears in the centre

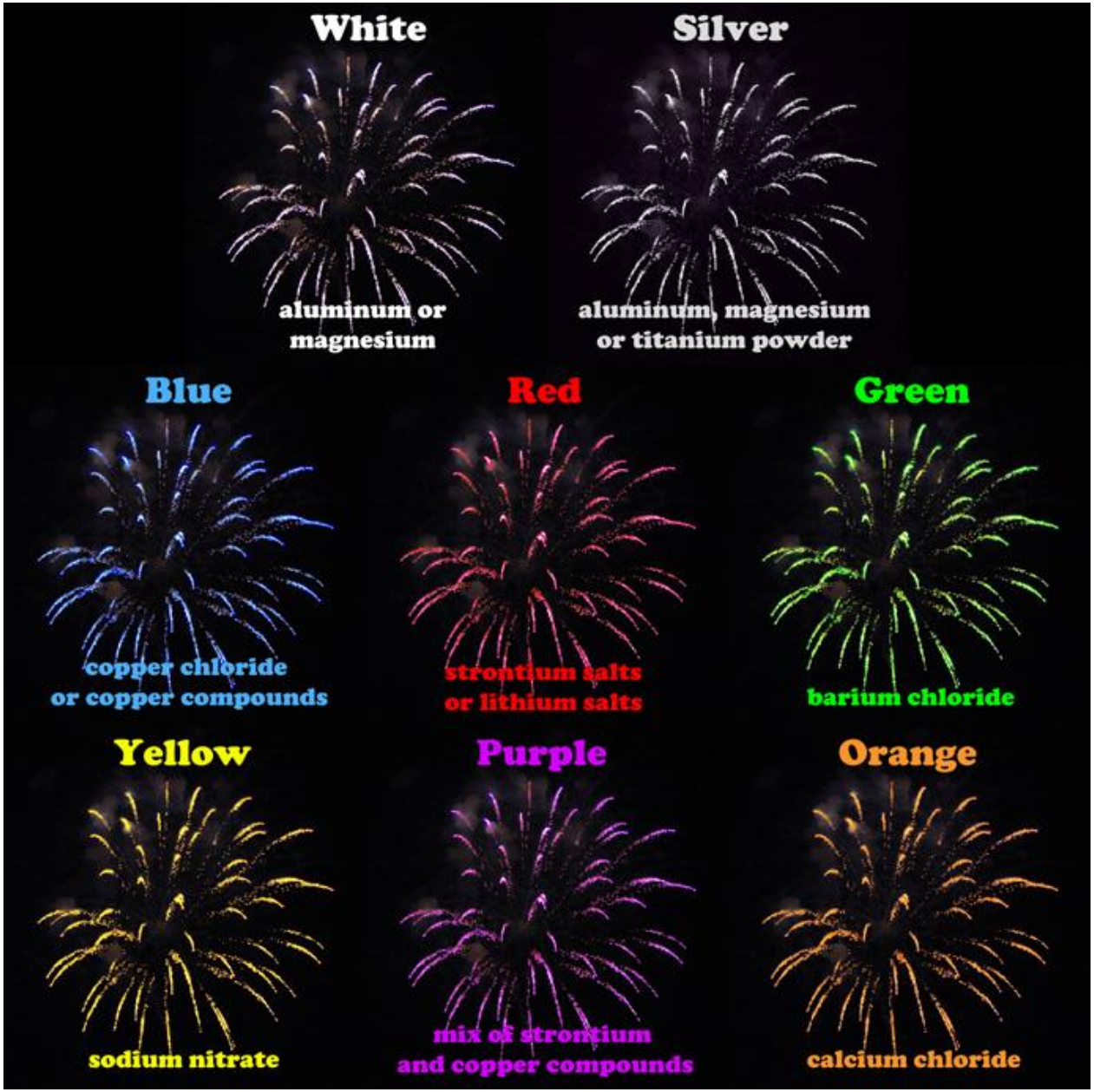
Flame test

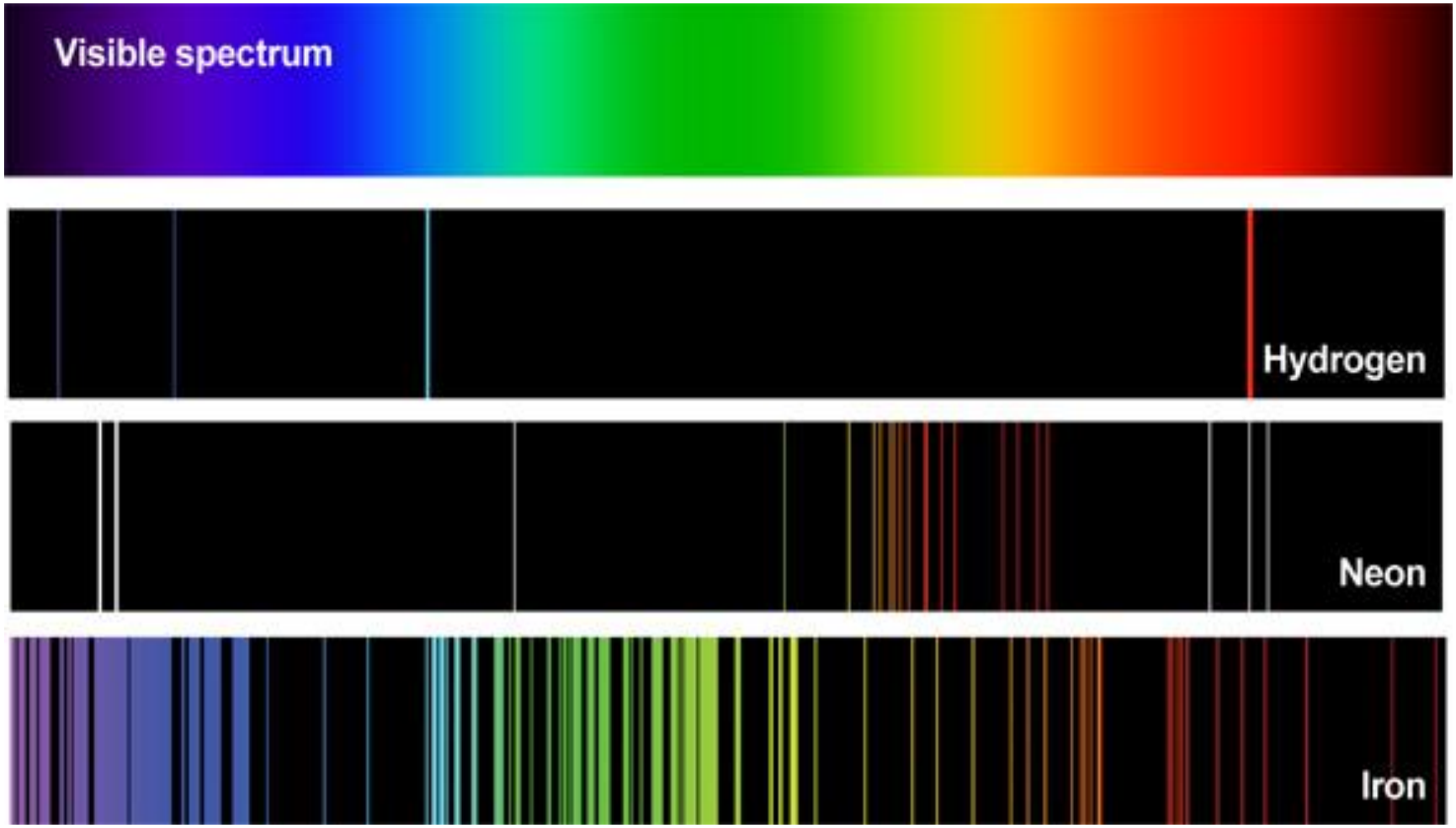
A flame test is a procedure used in chemistry to detect the presence of certain elements, primarily metal ions, based on each element's characteristic emission spectrum.

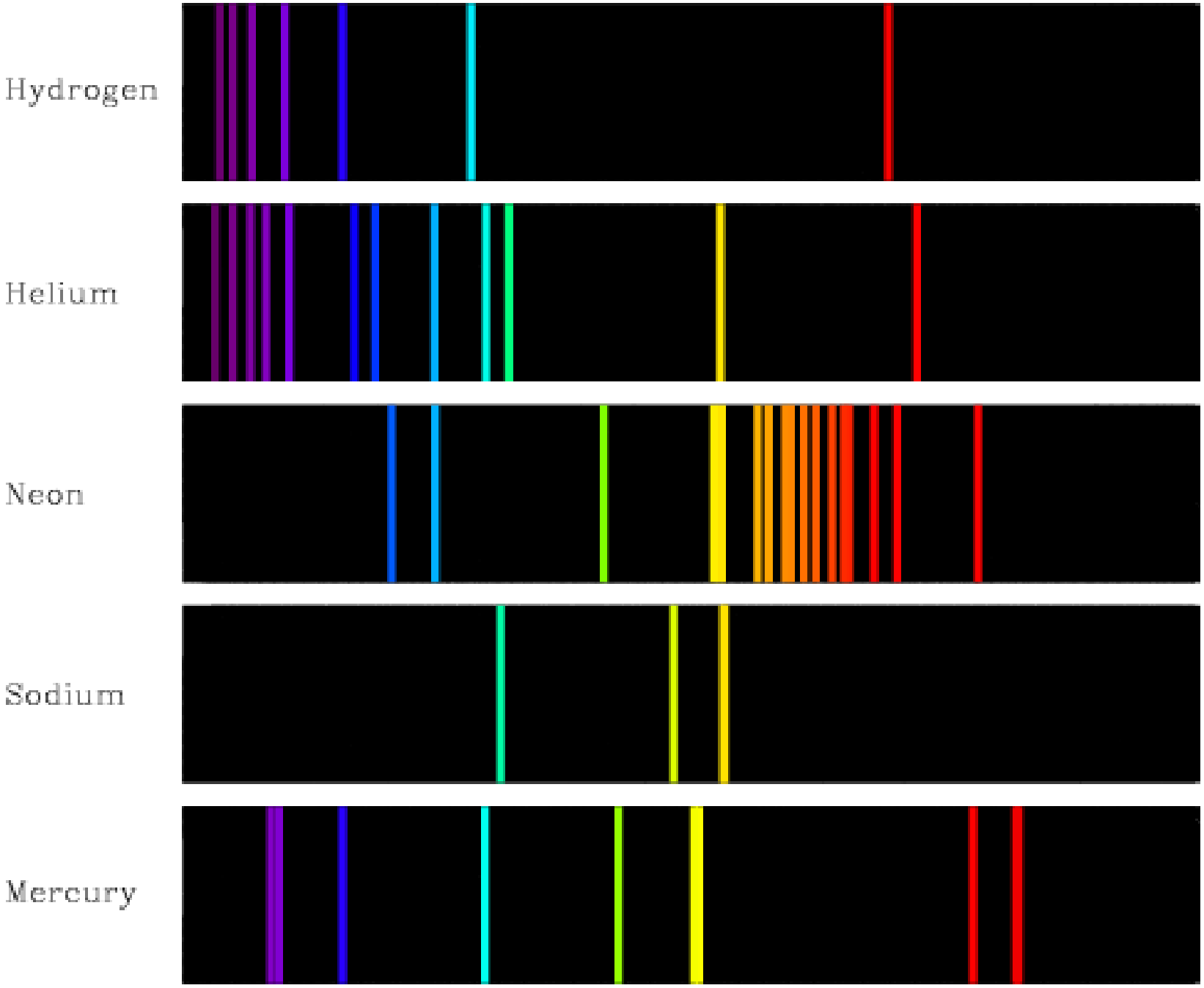
Copper	Lithium	Calcium	Potassium	Magnesium
Cu	**Li**	**Ca**	**K**	**Mg**
(green)	(red)	(brick red)	(violet)	(bright white)


LiCl
NaCl
KCl
RbCl
CsCl
$CaCl_2$
$SrCl_2$
$BaCl_2$
$CuCl_2$
TlCl
Chemistry Lover's


11
Na
Sodium
22.989770
56
Ba
Barium
137.327
38
Sr
Strontium
87.62
29
Cu
Copper
63.546
22
Ti
Titanium
47.867


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