

How Fireworks Get Their Colour?

1. The Explosion

When fireworks explode in the night sky, we see brilliant reds, blues, greens, and golds. But those colours aren't random — they're carefully created using chemistry and physics. So what actually makes fireworks?

A fireworks shell contains:

- **Fuel** (burns to create heat)
- **Oxidiser** (provides oxygen for burning)
- **Metal salts** (create colour)
- **A fuse**

When the fuse ignited, the fuel and oxidiser react in a fast exothermic reaction (a reaction that release energy). This produces intense heat and light. But heat alone doesn't explain the colours...

2. Excited Electrons

The real reason fireworks have different colour comes from electron energy level.

1. The explosion heats up the metal atoms
2. The heat gives energy to the electrons in those atoms
3. The electron 'jump' to higher energy levels
4. When they fall back down, they release energy as light

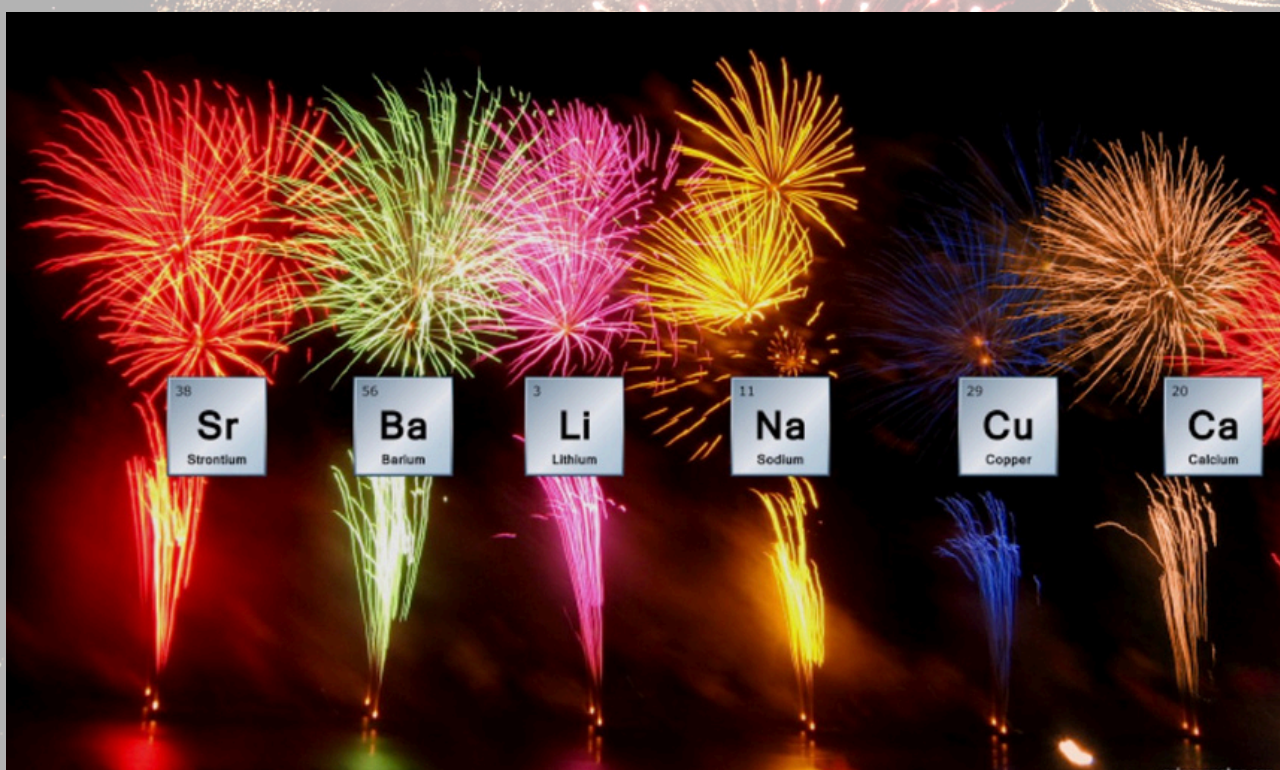
The released light has a specific colour depending on the element.



2. Different Metals = Different Colours

Here are some common elements used in fireworks.

Color	Element used
Red	Strontium
Orange	Calcium
Yellow	Sodium
Green	Barium
Blue	Copper
White/Silver	Magnesium/ Alumimium
Purple	Mixture of strontium(Red)+ Copper(Blue)



3. Why are blue fireworks uncommon?

Blue fireworks are difficult because:

- Copper compounds must be heated to around 1,000°F which is just enough to excite the copper monochloride molecules but not breaking them apart
- if the temperature exceeds 2,200°F or the compound degrades, it results in a washed-out or white colour

4. Physics behind the light

The colour of light depends on its **wavelength**.

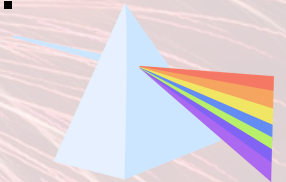
Red light has a longer wavelength

Blue light has a shorter wavelength

When electrons release energy, the amount of energy determines the wavelength and so the colours.

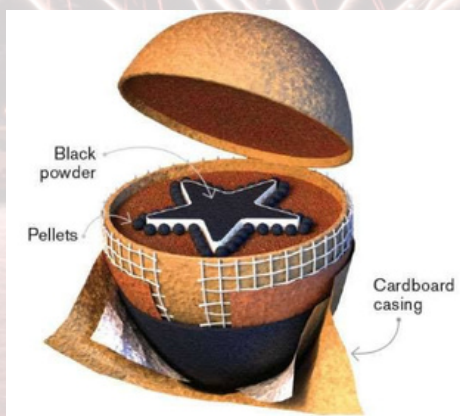
Higher energy = shorter wavelength (bluer light)

Lower energy = longer wavelength (redder light)



5. How does fireworks create shapes

Fireworks create shapes by arranging small, explosive pellets called “stars” in specific, 2D patterns within an aerial shell often glued to cardboard shapes. When the shell bursts, the stars are propelled outward in that same pattern, creating shapes like hearts and stars in the sky.



Monthly Question



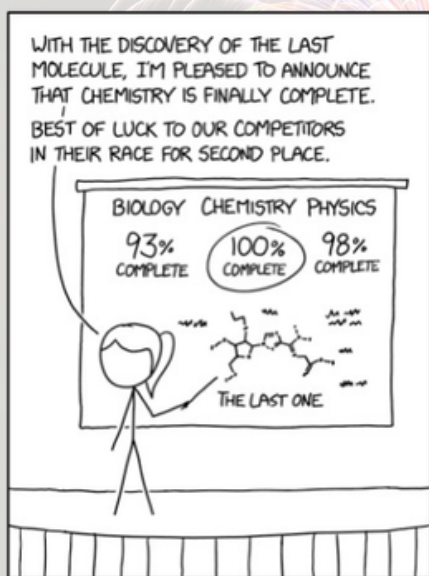
If you can answer all the Question correctly, you will receive a small gift!

Deadline: 24/4/2026

March Quiz Answer

Q1: D Q2: D Q3: D Q4: D Q5: D

Relaxing Zone



3					5		
	5	4	3				
8			6	9			4
		7	2	1	6	8	
6		8	5		7	9	1
5		9		8	6	7	
7				5	1		6
					2	4	1
		5					2

2	7	8	3	4	9	5	6	1
5	1	4	2	7	3	8	6	9
6	9	3	1	5	8	2	4	7
3	8	6	7	4	9	1	5	2
4	1	9	4	8	6	7	3	5
6	2	8	5	3	7	9	4	1
8	3	7	2	1	9	6	5	8
7	1	6	9	5	2	3	4	8
9	2	5	4	3	7	8	1	6
3	9	6	1	2	4	5	8	7

Ans:

Science Society 2025-2026

Chairperson: TAM YA XUAN (4A)

Vice Chairperson: MAK HO LONG JOSHUA (5C)

Committee Member: LI MAN NI (4B); TSUI WITTY (4C); YEUNG TSZ NAM (2A);
LAM PAK HIN (2C); LI TSZ TO (2C); DENG YONGSHAN (2D) &
HUNG CHI HO (2D)

Supervisor: Mr. LAU CHI KIN