Exciting elements through thermal catalysation

# Material and chemicals

## Material

* Bunsen burner
* Forceps
* Sequins

## Chemicals

* Strontium
* Hand sanitiser
* CuCl2
* LiCl
* KCl
* CaCl2
* Sr(NO3)2
* NaCl
* MgCl2

# Observations

|  |  |  |
| --- | --- | --- |
| Compound | Colour | Wavelength (nm) |
| Test\* | Yellow/Orange | ~590 |
| LiCl | Peach | ~610 |
| KCl | Indigo | ~420 |
| CaCl2 | Yellow/Orange | ~590 |
| Sr(NO3)2 | Red | ~650 |
| CuCl2 | Cyan | ~500 |
| SrCl2(aq) | Red | ~650 |
| NaCl | Mustard Yellow | ~580 |
| MgCl2 | Red | ~650 |

# Discussion

As seen in *Observations*, the compounds produced different frequencies of electromagnetic radiation when burned. It is known that the metals are the elements that are burning since many elements use the same components, for example §Cl, but produce very different results, in the case of Sr(NO3)2, Strontium is also present in SrCl2(aq), and still produces the same frequency. When the element is burned, electrons in the atom get excited by the thermal energy, when the electron the returns to its ground state. As this happens, a photon is emitted.

According to Planck’s equation, derived by Max Planck:

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Frequency of the photon is proportional to the energy released. This means that the frequency increases with the energy. Knowing this, we can conclude that the elements that emitted light with the shortest wavelengths released the most energy.

# Sources

Pearson Baccalaureate *Higher Level Chemistry*, Catrin Brown & Mike Ford, 2009