Chem 20 Unit D - Quantitative Changes in Chemical Reactions

What's that Chemical?

(Quantitative Analysis)

Dec 11-3:02 PM

Dr. Martyn Poliakoff
Proudly Presents:

The Periodic Table Movie of the Day!!!

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HEY!

(it's Friday let's play a game okay?)

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What's the identity of this chemical?

Stumped?

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Chemists have long looked for a way of identifying chemicals.

The two categories of identifying chemicals are:

Qualitative Analysis	Quantitative Analysis
Using qualities: - colour - reactivity - smell	**Using measured quantities:** - masses - spectroscopy - concentration

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Flame Test

One wicked cool way we can identify a chemcial is by it's flame colour. A list of flame colours is given in your data booklet.

Flame Colour of Elements

Element	Symbol	Colour
lithium	Li	red
sodium	Na	yellow
potassium	K	violet
rubidium	Rb	violet
cesium	Cs	violet
calcium	Ca	yellowish red
strontium	Sr	scarlet red
barium	Ba	yellowish green
copper	Cu	blue to green
boron	B	yellowish green
lead	Pb	blue-white

This only really works for metal ions!

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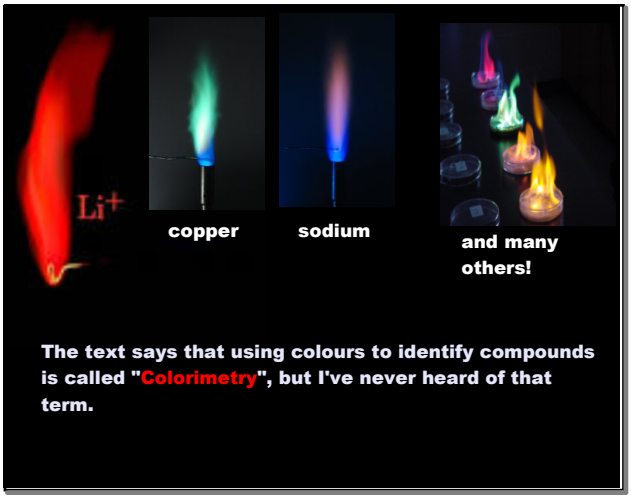

The text says that using colours to identify compounds is called "Colorimetry", but I've never heard of that term.

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Colours of Common Aqueous Ions

Ionic Species	Solution Concentration	
	1.0 mol/L	0.010 mol/L
chromate	yellow	pale yellow
chromium(III)	blue-green	green
chromium(II)	dark blue	pale blue
cobalt(II)	red	pink
copper(I)	blue-green	pale blue-green
copper(II)	blue	pale blue
dichromate	orange	pale orange
iron(II)	lime green	colourless
iron(III)	orange-yellow	pale yellow
manganese(II)	pale pink	colourless
nickel(II)	blue-green	pale blue-green
permanganate	deep purple	purple-pink

Your data booklet also contains the colours that some ions (mostly transition metals) form.

This can also be used in chemical analysis.

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We don't only need identify elements, will often need to determine the concentration of an unknown solution.

We have seen how we can do this through stoich.

Another way to do this is using experimental values and graphical means.

Lab Exercise 8 A (pg 317)
Work Through Together

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Rest of Class and HW:

Read Case Study: the Haber Process pg 325
Answer Case Study Questions 1 and 2.

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