

# A-Level Chemistry

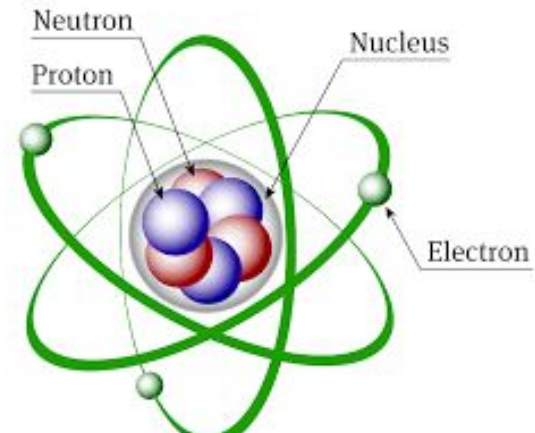
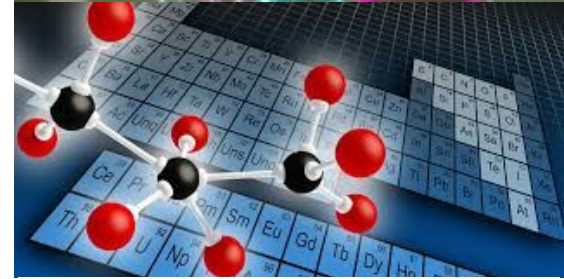
**Mr Collins – Lead teacher for Chemistry**

**Miss Jones – Teacher of Chemistry**



# What is Chemistry?

- The study of chemicals.....
- The study of atoms, elements, compounds and ions, their composition, structure and properties
- Consideration of how these things change during a chemical reaction
- Chemistry is sometimes called the ***central science*** as it provides a vital link between physics and biology

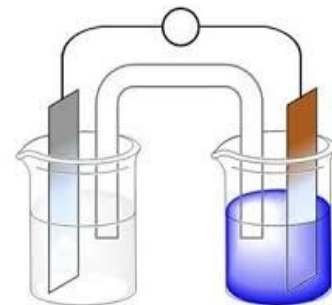
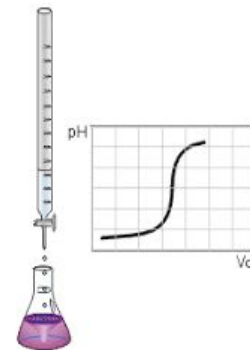
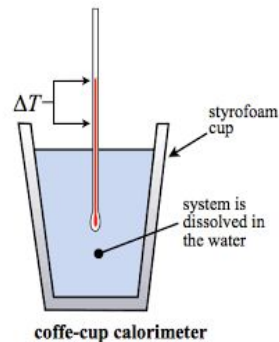


# Course Structure

- Physical Chemistry
- Inorganic Chemistry
- Organic Chemistry
- A minimum of 12 required practicals

# Physical Chemistry

- Amounts of substance
- Mass spectroscopy
- Energy changes in reactions
- Rates of reaction
- Electrochemistry
- Reactions in equilibrium
- Calculating pH



# Inorganic Chemistry

- Group 2 metals
- Group 7 non-metals The Halogens
- The Transition metals
- All of the elements across the 3<sup>rd</sup> period

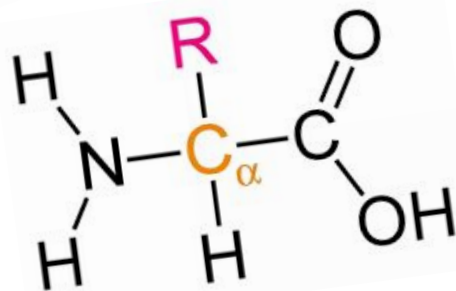
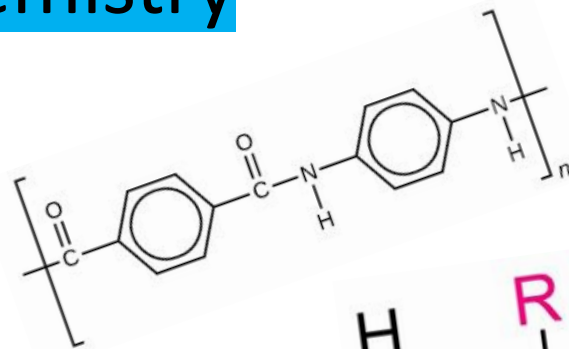
1	2		3	4	5	6	7	0									
		H						He									
Li	Be		B	C	N	O	F	Ne									
Na	Mg		Al	Si	P	S	Cl	Ar									
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac	Rf	Dh	Sg	Bh	Hs	Mt	Ds	Rg							

Legend:

- Alkali metals (blue)
- Transition metals (yellow)
- Halogens (green)
- Noble gases (red)

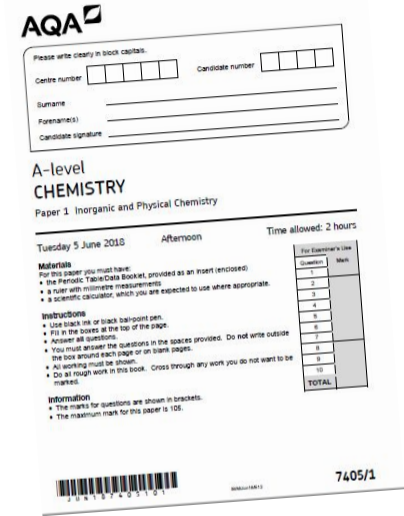
# Organic Chemistry

- We look exclusively at the chemistry of carbon
- From the chemistry of alkanes like petrol and diesel through to the chemistry of aldehydes and ketones
- From the chemistry of amino acids and DNA through to making medicines like aspirin and paracetamol
- Chemical analysis techniques



# Assessment

- Paper 1 – 2 hour exam
- Paper 2 – 2 hour exam
- Paper 3 – 2 hour exam
- Continual ongoing assessment of performance during the required practicals resulting in the award of a ***practical endorsement***



The image shows the front cover of an AQA A-level Chemistry Paper 1 exam form. At the top left is the AQA logo. Below it, there is a section for candidate information with fields for Centre number, Candidate number, Surname, Forename(s), and Candidate signature. The title 'A-level CHEMISTRY' is prominently displayed, followed by 'Paper 1 Inorganic and Physical Chemistry'. The date 'Tuesday 5 June 2018' and 'Afternoon' session are noted, along with a 'Time allowed: 2 hours'. A 'Materials' section lists required items like the Periodic Table Data Booklet, a ruler, and a calculator. 'Instructions' detail the use of black ink, filling in boxes, and writing in the provided spaces. An 'Information' section notes that marks are shown in brackets and the maximum mark is 105. On the right side, there is a table for the examiner's use to record marks for each question and a total. At the bottom, there is a barcode and the reference number '7405/1'.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
<b>TOTAL</b>	

# Assessment

## 2.2 AS

### Assessments

Paper 1	+	Paper 2
<b>What's assessed</b> <ul style="list-style-type: none"><li>• Relevant Physical chemistry topics (sections 3.1.1 to 3.1.4, 3.1.6 and 3.1.7)</li><li>• Inorganic chemistry (Section 3.2.1 to 3.2.3)</li><li>• Relevant practical skills</li></ul>		<b>What's assessed</b> <ul style="list-style-type: none"><li>• Relevant Physical chemistry topics (sections 3.1.2 to 3.1.6)</li><li>• Organic chemistry (Section 3.3.1 to 3.3.6)</li><li>• Relevant practical skills</li></ul>
<b>How it's assessed</b> <ul style="list-style-type: none"><li>• written exam: 1 hour 30 minutes</li><li>• 80 marks</li><li>• 50% of the AS</li></ul>		<b>How it's assessed</b> <ul style="list-style-type: none"><li>• written exam: 1 hour 30 minutes</li><li>• 80 marks</li><li>• 50% of the AS</li></ul>
<b>Questions</b> <p>65 marks of short and long answer questions</p> <p>15 marks of multiple choice questions</p>		<b>Questions</b> <p>65 marks of short and long answer questions</p> <p>15 marks of multiple choice questions</p>



# Assessment

## 2.3 A-level

### Assessments

Paper 1	+	Paper 2	+	Paper 3
<b>What's assessed</b> <ul style="list-style-type: none"><li>• Relevant Physical chemistry topics (sections 3.1.1 to 3.1.4, 3.1.6 to 3.1.8 and 3.1.10 to 3.1.12)</li><li>• Inorganic chemistry (Section 3.2)</li><li>• Relevant practical skills</li></ul>		<b>What's assessed</b> <ul style="list-style-type: none"><li>• Relevant Physical chemistry topics (sections 3.1.2 to 3.1.6 and 3.1.9)</li><li>• Organic chemistry (Section 3.3)</li><li>• Relevant practical skills</li></ul>		<b>What's assessed</b> <ul style="list-style-type: none"><li>• Any content</li><li>• Any practical skills</li></ul>
<b>How it's assessed</b> <ul style="list-style-type: none"><li>• written exam: 2 hours</li><li>• 105 marks</li><li>• 35% of A-level</li></ul>		<b>How it's assessed</b> <ul style="list-style-type: none"><li>• written exam: 2 hours</li><li>• 105 marks</li><li>• 35% of A-level</li></ul>		<b>How it's assessed</b> <ul style="list-style-type: none"><li>• written exam: 2 hours</li><li>• 90 marks</li><li>• 30% of A-level</li></ul>
<b>Questions</b> <p>105 marks of short and long answer questions</p>		<b>Questions</b> <p>105 marks of short and long answer questions</p>		<b>Questions</b> <p>40 marks of questions on practical techniques and data analysis</p> <p>20 marks of questions testing across the specification</p> <p>30 marks of multiple choice questions</p>

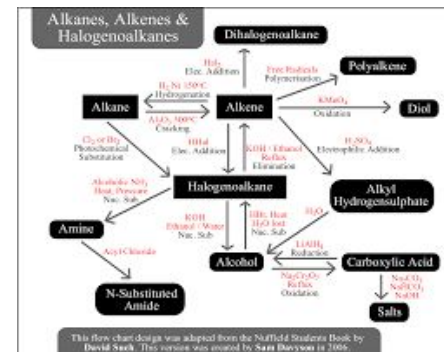
# Teaching hours and course requirements

- Students will receive **5 hours** of teaching each week
- The course is split between two teachers
- Students are required to engage in a minimum of **4 hours** independent study each week in addition to the teaching hours



# A challenging subject

- Chemistry requires vast subject knowledge
- A high level of complexity will be expected

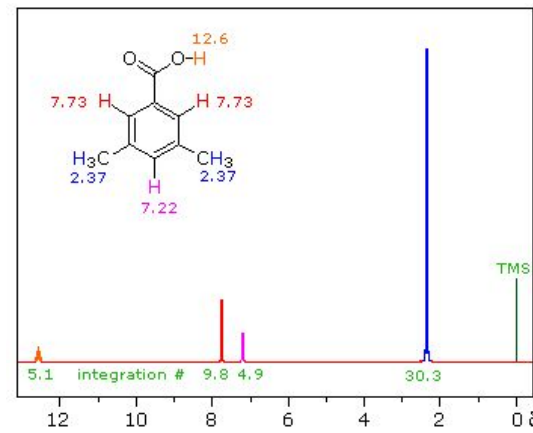


$$K_a = \frac{[\text{CH}_3\text{COO}^-][\text{H}^+]}{[\text{CH}_3\text{COOH}]}$$

$$1.74 \times 10^{-5} = \frac{0.20 \times [\text{H}^+]}{0.10}$$

$$[\text{H}^+] = 1.74 \times 10^{-5} \times \frac{0.10}{0.20}$$

$$= 8.7 \times 10^{-6} \text{ mol dm}^{-3}$$



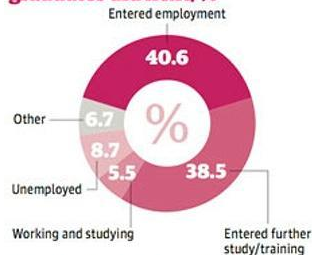
# Where will Chemistry take you?

- 



# Where will Chemistry take you?

## What 2009 chemistry graduates did next, %



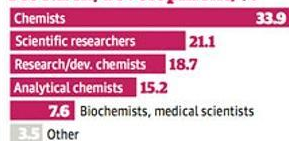
## Gender breakdown, %



## Types of work, %



## Sector breakout: Scientific research/development, %



PEOPLE EMPLOYED IN SCIENCE-BASED OCCUPATIONS IN THE UK



## EARNINGS LEAGUE TABLE

Medicine	£ 45,604
Engineering	£ 42,016
Physical/Environmental Subjects	£ 35,984
Architecture	£ 34,996
Maths or Computer Science	£ 34,008
Languages	£ 30,420
Social Sciences and Law	£ 30,004
Business and Finance	£ 30,004
Education	£ 30,004
Agricultural Sciences	£ 28,600
Biological Sciences	£ 27,976
Humanities	£ 27,976
Medical related subjects	£ 27,508
Technology	£ 27,508
Linguistics English and Classics	£ 26,416
Arts	£ 21,944
Media and Information Studies	£ 21,008

Average gross annual wages for graduates with undergraduate degrees, by subject of degree

# Why study at RHS?

- Enthusiastic teachers
- Regular assessment and feedback so you know how you are doing
- Lots of dedicated support so that you can achieve your full potential
- Leavers destinations for Ruislip High students include Russell Group universities

## Chemistry grades at RHS

- Suakshi Garg (A\*) now studying Medicine
- Jemima Brown (A\*) now studying Biomedical Sciences
- Robert Crowther (A) now studying Chemistry



# The rewards

- A fascinating subject
- A new level of detail

