



A Level Chemistry

Mrs Tjandra-Ilesley & Mrs Pettit

Y11 → Y12 Bridging Work

Name:

Welcome

Welcome to A Level Chemistry! At HRS we study the OCR Advanced Level Chemistry Course, Option A. This course requires a good understanding of all aspects that you have encountered of chemistry at GCSE. You will use all of the calculations you met during GCSE and more, as we develop and build upon your GCSE knowledge throughout this course.

This course is designed for folks who are naturally inquisitive, who like understanding why things happen, and love problem solving. All of these are key skills and traits that universities and employers look for.

Throughout the year we make use of the OCR A level chemistry textbook by Rob Ritchie and Dave Gent. Please ensure you have this textbook available to you for use at home and for independent study.

Once you have received your HRS email in year 12 you will receive access to the KS5 chemistry website, a bespoke website with access to all of the lesson resources.

In addition to the bridging work I have included a suggested reading and watch list so you can read around the subject.

Please bring your completed booklet to the **first** chemistry lesson, and hand in to your teacher.

Let me know if you have any further questions, and I look forward to seeing you in September!

Mrs Tjandra-Ilesley

The Periodic Table of the Elements

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
1 H hydrogen 1.0	2 He helium 4.0	3 Li lithium 6.9	4 Be beryllium 9.0	5 B boron 10.8	6 C carbon 12.0	7 N nitrogen 14.0	8 O oxygen 16.0	9 F fluorine 19.0	10 Ne neon 20.2
11 Na sodium 23.0	12 Mg magnesium 24.3	13 Al aluminium 27.0	14 Si silicon 28.1	15 P phosphorus 31.0	16 S sulfur 32.1	17 Cl chlorine 35.5	18 Ar argon 39.9	19 K potassium 39.1	20 Ca calcium 40.1
37 Rb rubidium 85.5	38 Sr strontium 87.6	39 Y yttrium 88.9	40 Zr zirconium 91.2	41 Nb niobium 92.9	42 Mo molybdenum 95.9	43 Tc technetium	44 Ru ruthenium 101.1	45 Rh rhodium 102.9	46 Pd palladium 106.4
55 Cs caesium 132.9	56 Ba barium 137.3	57-71 lanthanoids	72 Hf hafnium 178.5	73 Ta tantalum 180.9	74 W tungsten 183.8	75 Re rhenium 186.2	76 Os osmium 190.2	77 Ir iridium 192.2	78 Pt platinum 195.1
87 Fr francium	88 Ra radium	89-103 actinoids	104 Rf rutherfordium	105 Db dubnium	106 Sg seaborgium	107 Bh bohrium	108 Hs hassium	109 Mt meitnerium	110 Ds darmstadtium
119 K potassium 39.1	120 Ca calcium 40.1	121 Sc scandium 45.0	122 Ti titanium 47.9	123 V vanadium 50.9	124 Cr chromium 52.0	125 Mn manganese 54.9	126 Fe iron 55.8	127 Co cobalt 58.9	128 Ni nickel 58.7
137 Rb rubidium 85.5	138 Sr strontium 87.6	139 Y yttrium 88.9	140 Zr zirconium 91.2	141 Nb niobium 92.9	142 Mo molybdenum 95.9	143 Tc technetium	144 Ru ruthenium 101.1	145 Rh rhodium 102.9	146 Pd palladium 106.4
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743 Rb</									

Task 1: Draw the dot cross diagrams for the following substances.

a. Chlorine

b. Carbon dioxide (CO₂)

c. Ammonia (NH₃)

d. Magnesium Chloride (MgCl₂)

Task 2: Write the formulae for the following compounds

a) Hydrogen sulfide

b) Propane

c) Ethene

d) Ethanol

e) Silicon hydride

f) Aluminium nitrate

g) Barium carbonate

h) Sodium sulfate

i) Nitrogen fluoride

j) Aluminium chloride

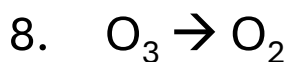
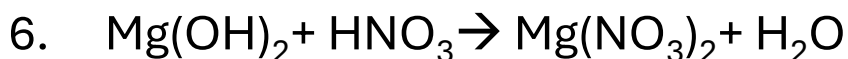
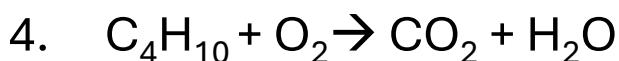
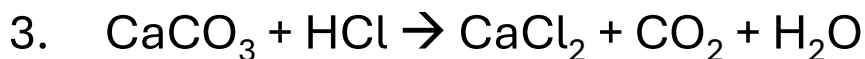
Task 3: Use the data in the type to identify the types of structure

Substance	Melting point (°C)	Boiling Point (°C)	Electrical conductivity as solid	Electrical conductivity as liquid	Electrical conductivity as a solution	Type of Structure (simple or giant) & Bonding (covalent, ionic or metallic)
A	54	120	poor	poor	poor	
B	403	567	good	good	not soluble	
C	-210	-196	poor	poor	poor	
D	1610	2230	poor	poor	not soluble	
E	615	876	poor	good	good	
F	3727	4827	good	-	not soluble	
G	56	342	good	good	good	
H	934	1568	poor	good	insoluble	
I	-105	-45	poor	poor	good	

Task 4: Explain, with reference to the strength of bonds and types of forces each substance interacts with, why...

- Simple molecules have low melting and boiling points
- Giant covalent lattices have high melting and boiling points
- Metals have high melting and boiling points (except mercury and gallium)
- Giant ionic lattices have high melting and boiling points

Task 5: Balance the following equations



9. Burning aluminium

10. Reaction of lithium with water

11. Thermal decomposition of lithium carbonate

12. Reaction of potassium hydroxide with sulfuric acid

Task 6: Memorise the following formulae and ions

Look	Cover	Write	Check
HCl hydrochloric acid			
H ₂ SO ₄ sulfuric acid			
HNO ₃ nitric acid			
H ₃ PO ₄ phosphoric acid			
NO ₃ ⁻ nitrate			
SO ₄ ²⁻ sulfate			
CO ₃ ²⁻ carbonate			
HCO ₃ ⁻ hydrogencarbonate			
OH ⁻ hydroxide			
H ⁻ hydride			
PO ₄ ³⁻ phosphate			
SO ₂ sulfur dioxide			
SO ₃ sulfur trioxide			
NH ₃ ammonia			
CH ₄ methane			
H ₂ S hydrogen sulfide			

Task 7: Rearrange the following equations to find the subject

Equation	
$n = m/M_r$	$M_r =$
$n = cV$	$c =$
$pV = nRT$	$n =$
$q = mc\Delta T$	$c =$
$K_c = \frac{[H_2]^3 [N_2]}{[NH_3]^2}$	$[N_2] =$
$K_a = \frac{[H^+] [CH_3COO^-]}{[CH_3COOH]}$	$[H^+] =$

Reading and Watching List for Reading Around the Subject

Reading List

- Mark Miodownik - Stuff Matters: The Strange Stories of the Marvellous Materials that Shape Our Man-Made World
- Sam Kean - Caesar's Last Breath: The Epic Story of the Air Around Us
- Penny Le Couteur, Jay Burreson - Napoleon's Buttons: How 17 Molecules Changes History
- Sam Kean - The Disappearing Spoon
- Peter Atkins - What Is Chemistry

Watch List

- [Andrew Szydlo – Explosive Chemistry](#)
- [MaChemGuy – Prep for A Level Chemistry](#)
- [Hunting the Elements](#)

Helpful Websites

- [Save My Exams](#)
- [OCR Chemistry](#)
- [Chemistry KS5 Website \(only accessible with a HRS email address\)](#)

