

Tin Ka Ping Secondary School

S3 Science Syllabus (Chemistry)

Topic 1: Planet Earth

Unit	Knowledge & understanding	Scientific method & problem solving skills	Communication skills	Practical skills	Attitude and Civic education	Chinese Culture
Introducing chemistry	<ul style="list-style-type: none"> • Safety labels of common chemicals • Names and symbols of elements 		<ul style="list-style-type: none"> • Use safety labels to represent the property of chemicals 	<ul style="list-style-type: none"> • Identify, choose and handle appropriate apparatus properly 	<ul style="list-style-type: none"> • be serious in laboratory 	
The atmosphere	<ul style="list-style-type: none"> • The composition of air and their tests • Extract oxygen from fractional distillation • explain the definition of elements, compounds & mixtures • Physical / chemical property 	<ul style="list-style-type: none"> • how to get pure substances from mixtures • Choose appropriate methods to test gases 	<ul style="list-style-type: none"> • explain the properties of compounds • use table to make comparison 	<ul style="list-style-type: none"> • Experimental set-up to collect and test gases • Develop the scene of observation 		
The ocean	<ul style="list-style-type: none"> • Concept of solution and concentration • Composition of ocean and uses of the elements • Physical / chemical changes 	<ul style="list-style-type: none"> • Choose appropriate methods to isolate useful materials 	<ul style="list-style-type: none"> • state observations in experiments 	<ul style="list-style-type: none"> • Processes of flame test and silver nitrate test 	<ul style="list-style-type: none"> • limit resources in the earth and save metals 	
Rocks and minerals	<ul style="list-style-type: none"> • Knowledge of calcium carbonate • Test for carbonate 	<ul style="list-style-type: none"> • Choose appropriate chemical methods to identify different chemicals 	<ul style="list-style-type: none"> • state observations in experiments 	<ul style="list-style-type: none"> • identify unknown sample by using different chemical tests 	<ul style="list-style-type: none"> • show concern over the limited reserve of natural resources 	

Topic 2: The Microscopic World

Unit	Knowledge & understanding	Scientific method & problem solving skills	Communication skills	Practical skills	Attitude and Civic education	Chinese Culture
Atomic structure	<ul style="list-style-type: none"> Define atoms, elements, compounds and mixture Describe the structure of atoms (size, location) Atoms consist of protons, neutron & electrons. State the relative mass and the charge of protons, neutrons & electrons Identify isotopes & properties 	<ul style="list-style-type: none"> Deduce the structures of atoms from experimental results Use model to describe structure of atoms Perform calculation on relative atomic mass 	<ul style="list-style-type: none"> Use symbols to represent elements 	<ul style="list-style-type: none"> Observation Recording Distinguish elements & compounds Construct a model to explain the structure of atoms 	<ul style="list-style-type: none"> Appreciate the work of chemists on developing the structure of an atom Recognize the limitations of models 	
Periodic table	<ul style="list-style-type: none"> The relationship between the Periodic Table and the properties of the elements Idea of periodicity (metallic character, electronegativity) 	<ul style="list-style-type: none"> Predict the periodicity of elements from the chemical patterns Find out which elements are in use today & how are they used 	<ul style="list-style-type: none"> Group the elements from the periodic table according to their electron arrangement Use table to present the elements with the electronic configuration 	<ul style="list-style-type: none"> Interpret & evaluate observations from the periodic table Choice of elements in different conditions 	<ul style="list-style-type: none"> Appreciate historical development of scientific knowledge changes over time. 	

Unit	Knowledge & understanding	Scientific method & problem solving skills	Communication skills	Practical skills	Attitude and Civic education	Chinese Culture
Ionic bonding	<ul style="list-style-type: none"> • identify polyatomic ions • name some common cations and anions according to the chemical formulae of ions • name ionic compounds based on the component ions • describe the colours of some common ions in aqueous solutions • describe the structure of an ionic crystal • define and distinguish the terms: formula mass and relative molecular mass 	<ul style="list-style-type: none"> • predict the ions formed by atoms of metals and non-metals by using information in the Periodic Table • interpret chemical formulae of ionic compounds in terms of the ions present and their ratios 	<ul style="list-style-type: none"> • describe, using electron diagrams, the formation of ions and ionic bonds • draw the electron diagrams of cations and anions • construct formulae of ionic compounds based on their names or component ions • communicate scientific ideas with appropriate use of chemical symbols and formulae 	<ul style="list-style-type: none"> • migration of ions by electrolysis 		
covalent bonding	<ul style="list-style-type: none"> • describe the formation of a covalent bond • define and distinguish the terms: formula mass and relative molecular mass 	<ul style="list-style-type: none"> • interpret chemical formulae of covalent compounds in terms of the elements present and the ratios of their atoms • write the names and formulae of covalent 	<ul style="list-style-type: none"> • describe, using electron diagrams, the formation of single, double and triple bonds • communicate scientific ideas with appropriate use of chemical 			

		compounds based on their component atoms • perform calculations related to formula masses and relative molecular masses of compounds	symbols and formulae			
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