



**KIRKHAM**  
GRAMMAR SCHOOL

# CHEMISTRY

## WHY CHOOSE CHEMISTRY?

Chemistry occupies a central position among Science subjects. On the one hand it is linked with Physics through Physical Chemistry and on the other with Biology through Organic Chemistry. Thus Chemistry is fundamental to Physiology, Medicine and Dentistry, and it underlies many branches of Technology such as Atomic Energy, Metallurgy, Fuel Technology, Engineering (particularly Chemical Engineering) and Biological Sciences. Other subject combinations have proved useful, eg Chemistry, Biology and Geography for Environment and Agricultural courses; Chemistry is the first priority for these courses.

## WHY CHOOSE KIRKHAM GRAMMAR SCHOOL?

The Faculty of Science provides a modern and well-equipped centre for Advanced Level study at Kirkham Grammar School. The academic staff are very well qualified and have considerable experience outside teaching, including Industrial and Postgraduate Research, Industrial Consultancy and Laboratory Management. Teaching within the department is carried out in small groups establishing a good rapport between staff and students and ensuring a high degree of individual attention. An adult and mature approach is adopted towards students and the same is expected in return.

## THE COURSE

### Course Specification for A-level Chemistry:

#### **Examination Board: AQA**

This qualification is linear. Linear means that students will sit all the A-level exams at the end of their A-level course.

#### **Subject content:**

##### **3.1 Physical chemistry**

- 3.1.1 Atomic structure
- 3.1.2 Amount of substance
- 3.1.3 Bonding

- 3.1.4 Energetics
- 3.1.5 Kinetics
- 3.1.6 Chemical equilibria and Le Chatelier's principle
- 3.1.7 Oxidation, reduction and redox equations
- 3.1.8 Thermodynamics (A-level only)
- 3.1.9 Rate equations (A-level only)
- 3.1.10 Equilibrium constant  $K_c$  for homogeneous systems (A-level only)
- 3.1.11 Electrode potentials and electrochemical cells (A-level only)
- 3.1.12 Acids and bases (A-level only)

### **3.2 Inorganic chemistry**

- 3.2.1 Periodicity
- 3.2.2 Group 2, the alkaline earth metals
- 3.2.3 Group 7 (17), the halogens
- 3.2.4 Properties of Period 3 elements and their oxides (A-level only)
- 3.2.5 Transition metals (A-level only)
- 3.2.6 Reactions of ions in aqueous solution (A-level only)

### **3.3 Organic chemistry**

- 3.3.1 Introduction to organic chemistry
- 3.3.2 Alkanes
- 3.3.3 Halogenoalkanes
- 3.3.4 Alkenes
- 3.3.5 Alcohols
- 3.3.6 Organic analysis
- 3.3.7 Optical isomerism (A-level only)
- 3.3.8 Aldehydes and ketones (A-level only)
- 3.3.9 Carboxylic acids and derivatives (A-level only)
- 3.3.10 Aromatic chemistry (A-level only)
- 3.3.11 Amines (A-level only)
- 3.3.12 Polymers (A-level only)
- 3.3.13 Amino acids, proteins and DNA (A-level only)
- 3.3.14 Organic synthesis (A-level only)
- 3.3.15 Nuclear magnetic resonance spectroscopy (A-level only)
- 3.3.16 Chromatography (A-level only)

## **Assessment**

Three papers each of 2 hour duration. All A-level topics and practical skills are examined.

## **CAREERS**

Science Teacher

Chemical Engineer

Agricultural Chemist

Metallurgist

Technical Sales

Food Technologist

Pharmacist

Biochemist

Nurse/Doctor

Public Analyst

Research Chemist

Laboratory Scientist

Animal Technician

Dentist

## **EXTRA-CURRICULAR**

Royal Society of Chemistry Olympiad

Royal Society of Chemistry Spectroscopy in a Suitcase

Visits to local University Departments

Cambridge University Challenge C3L6