

CHEMISTRY

What is a chemist?

Chemistry is concerned with the physical and chemical properties, composition and structure of all living and non-living materials, and how we synthesise such materials and modify them for their safe and beneficial use in our modern lives. A chemist is a scientist who specialises in the field of chemistry.

Discover
Science + Engineering

What do they do?

Chemistry is involved in almost everything with which we come in contact. The life processes of all organisms involve chemical changes. Chemists play a key role in the development of drugs, which are helping to cure and alleviate diseases and prolong life span. The work of a chemist can be challenging and exciting. Most chemists work in laboratories equipped with state-of-the-art instruments. Chemists make new materials and discover ways to use known materials for new purposes. Chemistry is a fundamental scientific subject central to a diverse range of human activities. It has made vital contributions to improving human health and life expectancy, advancing methods of food production and in the monitoring of our environment. Chemistry is a relatively wide term in the scientific world, as chemists may specialise in different sub-fields. Chemistry degrees are structured around organic chemistry; elements of physical chemistry;

structural and inorganic chemistry and medicinal chemistry. Medicinal chemists are involved in the development of new drug molecule or they develop the processes needed for large-scale manufacture. Chemistry is not an isolated subject. It is strategically placed within science as a whole, and the interfaces between chemistry and other sciences give the chemist a broad, multi-disciplinary outlook on the scientific world. Chemists help biologists to understand fundamental interactions between molecules that drive the processes of life. Chemists make new materials, the properties of which are studied by physicists, engineers and materials scientists. Chemists work with environmentalists to understand problems such as pollution and global warming. Polymers designed by chemists make their way through applications specialists to become the packaging for foods on the supermarket shelves.

As a chemist you could...



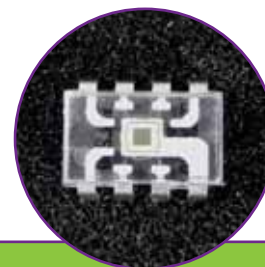
Identify drug targets against diseases such as cancer and diabetes



design and create new cures and safer, more effective, drugs



develop new synthetic fibres or plastics



research new devices in nanotechnology

Career opportunities

Chemistry is an exciting modern science which opens opportunities for work as a chemist in a very wide range of industries such as: pharmaceutical drug production, clean chemical technologies, paints and plastics, quality control & validation, textiles, mineral & metal processing, drug discovery and development, electronic materials & components and biomedical devices. Typical job titles of chemistry graduates include, Research Chemist, Production Manager, Process Engineer, Environmental Manager and Forensic Chemist. Chemistry lies near the heart of many areas of public concern, such as improvement in health care, conservation of natural

resources and protection of the environment. In the new environmentally conscious age, a challenge facing chemists everywhere is how to prepare new drugs, materials, dyestuffs etc. in ways that are more energy efficient and non-polluting. Chemists are forever pushing forward the frontiers of knowledge and providing the basic materials for the innovations that revolutionise our world. The expertise of chemists will impact on genetics, biological catalysis, self-replicating molecules and an understanding of atmospheric and environmental systems. There has never been a more exciting time to become a professional chemist.

Did you know?



Taking on a big killer

Quinine is an anti-malaria drug that is found in gin and tonic. Malaria is reckoned to have killed more people in World War II than either bullets or bombs. Even today, it causes over a million deaths a year.



Slow growers

Today chemists are interested in synthesising naturally occurring compounds which show interesting biological and medicinal properties. For example taxol is a compound isolated from the bark of slow growing Pacific Yew trees. Taxol has shown promise as an agent against cancer.