

 Learning Objectives

After completing this lesson, students will be able to:

- understand the various branches of applied chemistry.
- know the technology of Nanochemistry.
- know the various types of drugs.
- understand the various uses of electrochemistry.
- understand the applications of radiochemistry.
- understand various types of dyes and their application.
- acquire knowledge about food chemistry and agricultural chemistry.
- understand some basic ideas about forensic chemistry.

**Introduction**

Food, medicines, cosmetics, dress materials and gold covering ornaments are some of the items used in our day to day life. They may differ in nature and applications. But all these are associated with chemistry. They are made of synthetic / natural chemicals.

We face a lot of difficulties in different means to lead our day to day life. Such difficulties make chemists to come out of new ideas and theories. For example, when people suffered from diseases, new chemical compounds were synthesized and used as drugs. New techniques were also developed to diagnose diseases. When farmers suffered due to low crop yield and pest-related problems in crop field, chemists developed new chemical fertilizers and pesticides to combat these issues. Thus chemical principles and theories are applied to various fields in order to achieve specific results

or to solve real-world problems. This is called **applied chemistry**. In this lesson, let us discuss various branches of applied chemistry and their significance.

16.1 Nanochemistry

We know that the size and shape of materials influence their characteristics. Scientists found that materials having size about $1/1,000,000,000$ metre show special characteristics. Then they started producing such kind of materials and studied the effect of size on properties. Thus a new branch of chemistry called 'Nanochemistry' was developed.

Nanochemistry is a branch of nanoscience, that deals with the chemical applications of nanomaterials in nanotechnology. It involves synthesis and manipulation of materials at atomic and molecular level and the study of their physical and chemical properties.