

14. MAGNETIC METHODS OF ANALYSIS

14.1 Introduction

The magnetic properties of matter are inherently related to its structural properties. Therefore the methods based on the investigation of magnetic properties are especially precious tools for the elucidation and identification of molecule structure, and/or analysis for components of mixed systems.

Magnetic resonance spectroscopic methods are widely used today, and have an indispensable role in all those investigations which are concerned with the structure and dynamics of (organic and inorganic) compounds.

In this chapter the sections of electron paramagnetic resonance (EPR) spectroscopy and nuclear magnetic resonance (NMR) spectroscopy follow each other, and a subsequent section is devoted to those techniques which are based on the measurement of various magnetic properties of substances originating from their composition and structure.

Mass spectrometry is not included in this chapter, although in most instruments magnetic separation serves for the analysis of ions of various charge/mass ratios, originating from ionisation and fractionation of the compounds investigated. The terms and definitions concerning mass spectrometry and mass spectrometric techniques are collected in Chapter 12.