

## 5. THERMOANALYTICAL AND ENTHALPIMETRIC METHODS

### 5.1 Introduction

In this chapter two groups of analytical methods are discussed. The first group includes those methods in which a physical property of a substance is measured as a function of temperature, whilst the substance is subjected to a controlled temperature programme. These methods are known as thermal analytical methods, and the name: *thermal analysis* as a collective designation was introduced long ago and is accepted internationally.

In analytical chemistry pyrolysis is usually a pretreatment process of the sample, which is followed by analytical measurements such as gas chromatography, mass spectrometry, infrared absorption spectroscopy etc. Since the pyrolysis is carried out by a controlled heating process it can be considered as the first part of a thermoanalytical procedure where the heating and analytical measurements are separated both in time and in location. Thus, the special terms and definitions connected with pyrolysis are presented in a separate section (5.3).

The second group of methods involves those methods in which the enthalpy change for the reaction of an analyte, initiated by a reactant or by a catalyst is measured. The collective designation of these methods is *enthalpimetric analysis*.

The definitions of the basic terms related to thermal analysis, analytical pyrolysis and enthalpimetric analysis are given in Sections 5.2.1, 5.3 and 5.4.1 respectively.