

THERMAL ANALYSIS OF POLYMERS

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ABSTRACT

In the quarter century since the first paper on the thermal analysis of polymers in the UK there have been striking advances. The number of techniques in regular use now includes DTA, TG, DSC (in two modes), TMA, DMTA, DETA, thermoluminescence, thermodilatometry, EGD and EGA. Thermal techniques have been combined with other methods to give powerful tools for the diagnosis of polymer properties at various temperatures. Amongst these are mass spectroscopy, smoke evolution analysis, Fourier transform infrared spectroscopy; less widely used techniques measure acoustic, optical, electrical and magnetic characteristics. The influence of the computer both in operating and in assisting in the interpretation of thermal analysis curves has made a significant change in the scenario of thermal analysis.

The main application of TA remains the study of the thermal degradation of polymers and this will be covered in detail. Curing reactions in polymers are important and in future TA will be increasingly used to study the effects of temperature on the engineering properties of polymers.

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