【熱重分析儀串聯傅立葉轉換紅外線光譜儀】

熱重分析儀（PerkinElmer STA 8000）可用於研究線性加熱環境中燃料的失重歷程和放熱現象。結合差示掃描量熱法（DSC）可測量樣品隨時間的吸熱或放熱。使用連接到TGA的傅立葉變換紅外線光譜儀(PerkinElmer Spectrum Two FT-IR）分析 TGA 實驗過程的氣體產物。為了防止低揮發性氣體凝結，將管路和傳輸線加熱至280°C並連續收集產氣的FTIR光譜。 對於分子量較小的氣體，例如CO2，CO，H2O 和 CH4 等可以很容易地被檢測出。但是對於較複雜的化合物，例如烴，酚，酸和碳基化合物（酸，醛和酮），則只能識別出特殊的官能基。最後則使用 Spectrum TimeBase 軟體進行產氣分析。

【TGA-FTIR】

The thermogravimetric analyzer, (PerkinElmer STA 8000) can be used to study the weight loss history and exothermic phenomenon of the fuels in a linearly heated environment. It is coupled with a differential scanning calorimetry (DSC) to measure the heat flow into or out of the sample over time. Evolved gas products in the TGA experiments are then analyzed using a Fourier transform infrared spectrometer (PerkinElmer Spectrum Two FT-IR), which is connected to the TGA. To prevent the condensation of less-volatile products, the gas cell and the transfer line were both heated at 280 °C. FTIR spectra of the gaseous products were collected continuously. Light gases, such as CO2, CO, H2O and CH4, can be easily detected. However, for more complex compounds, such as hydrocarbons, phenols, acids, and carbon-based compounds (acids, aldehydes and ketones), only special functional groups can be identified. The evolved gas products are obtained and analyzed using the software Spectrum TimeBase.

熱重分析儀串聯傅立葉轉換紅外線光譜儀(TGA-FTIR)