

Thermogravimetric Analysis in Combination with FTIR

Monika Schennen & Wolfgang Kunze,
Waters GmbH UB TA Instruments, Eschborn Germany

Thermogravimetric Analysis (TGA) is a thermal analysis technique used to measure changes in the weight (mass) of a sample as a function of temperature and/or time. The TGA can be interfaced with a FTIR for continuous monitoring of evolved gases during heating. It is a valuable technique for identifying the volatiles evolved from materials heated in a flowing gas stream in a TGA furnace.

To identify the evolved gases mass spectrometer and / or FTIR spectrometer are used. The mass spectrometer coupling gives higher sensitivity but the spectra interpretation is more complex. With a new furnace design we have improved the sensitivity of FTIR measurements. A heated interface was developed to avoid cold spots.

Different nail polish were analysed isothermal at room temperature to quantify (TGA) and qualify (IR) the used solvents and check the drying time. Dry samples were thermal loaded and pyrolyzed to qualify the products of decomposition.