

Two-dimensional correlation analysis study of
the photo-degradation of poly(ethylene terephthalate) film

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The photo-degradation of poly(ethylene terephthalate) (PET) film was investigated in detail using ultraviolet-visible (UV-visible) spectroscopy, Fourier transform infrared (FTIR) spectroscopy, thermogravimetric analysis (TGA) and two-dimensional (2D) correlation analysis. The analysis of 2D FTIR correlation spectra led to the identification of photoproducts: esters, peresters and benzoic acids. The photo-degradation of PET films strongly influences the spectral changes of the ester linkages as well as the CH₂ groups adjacent to the ester groups. In addition, the spectral change of CH₂ groups occurred before that of terephthalate groups.