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Abstract:

Polycarbonate nanocomposites filled with pristine and modified silica were prepared by simple melt compounding. The thermal degradation behavior of composites was investigated by thermogravimetric analysis coupled with differential scanning calorimetry (TGA/DSC). To understand the thermal degradation mechanism, the chemical structures of gaseous and solid degradation products were detected by thermogravimetric analysis coupled with Fourier transform infrared spectrometry (TGA/FTIR) and X-ray photoelectron spectroscopy (XPS), respectively. Kissinger-Akahira-Sunose (KAS) and Flynn-Wall-Ozawa (FWO) methods were employed to analyze the thermal degradation kinetics. High thermal degradation temperature was obtained by incorporating both types of nanoparticles into matrix, but the maximum mass loss rate increased. According to the DSC curves for degradation process, the change of the number and position of absorption peaks meant that the degradation mechanism of composites was different from that of neat PC. The analysis

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