



**DEGRADATION EFFECT OF CLAY ON BURNING BEHAVIOR OF POLY(ETHYLENE TEREPHTHALATE )/ ORGANO CLAY NANOCOMPOSITES**

S.Habibi<sup>\*a</sup>, H.Nazockdast<sup>b</sup>, A. Rashidi<sup>c</sup>, S.Bazgir<sup>c</sup>

<sup>a</sup> Islamic Azad university – Shahr-e-Rey Branch, <sup>b</sup> Amir kabir University of Technology and <sup>c</sup> Islamic Azad University –Science and Research Branch

\*Corresponding author: [s.habibi@iausr.ac.ir](mailto:s.habibi@iausr.ac.ir)

The main objective of present work was to study influence of clay degradation effect on the flame retardancy performance of poly(ethylene terephthalate)/organoclay nanocomposite systems. The nanocomposite samples varying in organoclay contents were prepared by melt intercalation process in co-rotating twin extruder. Their nano- dispersion morphology was confirmed by XRD and TEM. The dilute solution viscosity technique was used to evaluate the intrinsic viscosity of PET matrix. The incorporation of clay reduces the intrinsic viscosity of polymer matrix which is obviously related to catalytic effect of organo clay on degradation of PET matrix. The flame retardancy and thermal stability of samples were investigated by using cone calorimeter and thermogravimetric analysis(TGA). From these results it was demonstrated that the catalytic decomposition effect of MMT on PET causes acceleration of polymer ignition which can be confirmed by TGA result. However, the flammability property of PET/MMT improves as the content of clay increases by means of decrease in Peak of heat release rate, mass loss rate and CO and CO<sub>2</sub> production of nanocomposite samples.