Study of kinetics of PET (polyethylene terephthalate) depolymerization in supercritical methanol

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Polyethylene terephthalate (PET) is a thermoplastic polymer resin of the polyester family used in synthetic fibers, liquid containers, thermoforming applications and engineering resins. With extensive use of PET in various applications, its recycling has received wide attention for the preservation of resources and the protection of the environment. One of the recycling processes is to depolymerize PET into its monomer products. For the efficient design of PET depolymerization, a robust kinetic model of PET depolymerization is strongly needed.

In this study, we consider methanoysis process of PET using supercritical methanol. Theoretical kinetics model was developed employing concepts of continuous kinetics. Kinetic equations were developed for thermal degradation of PET and the governing differential equations were solved using moment method. The theoretical model is expected to predict the experimental data.