

Synthesis, Characterization and Fire Retardancy of Amide-based Molecules Bearing Decyl Terminal Group

ABSTRACT

Fire retardant materials play an important role in protecting property from damage. Fire retardants are chemicals added to manufactured materials and coating to delay the spread of fire disasters. Hence, fire retardant materials are an essential parameter to be considered for the safety of human health and must be taken at the beginning of instrument or equipment development. Polyester resins were blended with synthesized compounds, and their fire-retardant properties were investigated and compared with the commercial polyester resin in the market. Fire retardation of the materials occurred due to the removal of heat from the combustible materials and the formation of char during the fire, which disrupts the contact from combustion. In this study, a series of new amide molecules consisting of decyl terminal group was synthesized and characterized. The structures of these compounds were confirmed using Fourier Transform Infrared (FTIR), Nuclear Magnetic Resonance (NMR), and CHN elemental analysis. Meanwhile, the fire retardant property was investigated using Limiting Oxygen Index (LOI).