

**ABSTRACT**

High molecular weight Polylactic acid materials (PLA) were prepared using novel lanthanum oxide (LaO) and lanthanum oxide, stannous chloride binary catalysts system (LaO, SnCl₂). PLA prepared using LaO catalyst was transparent while SnCl₂ catalyzed material showed light brown color. FTIR analysis confirmed the formation of polylactic acid. Differential scanning calorimetric analysis showed higher value of glass transition temperature (T_g) for binary catalysts system compared to just LaO catalyst materials. UV Visible spectrum of LaO catalyzed materials showed much higher optical transparency compared to SnCl₂ and SnCl₂ mixed with different ratios of LaO. Thermal stability and degradational behavior of these materials was studied using thermogravimetric and scanning calorimetric techniques. Among the nanocomposites, composites prepared from binary catalyst materials and organic modified clay showed improved thermal stability upto 4 wt/wt% of clay. Nanocomposites prepared with clay loadings below 4 wt% do not showed any aggregation of nanoclays in the polymer clay nanocomposites.