

Tungsten catalyzed ring opening metathesis polymerizations of norbornene derivatives

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Because of their low specific gravity, high transparency, low water absorbency, good insulating, low birefringence and high heat resistance, cyclo olefin polymers (COPs) have been widely used in many industrial areas such as optical applications for lenses & prisms, medical & food containers, semiconductors and liquid crystal display components. In this study, we prepared cyclo olefin polymer of norbornene derivatives by using tungsten or ruthenium based ROMP catalyst system. In the case of WCl₆-trialkyl aluminum-alcohol catalyst system, when the molar ratio of catalyst to monomer was 1 to 1,000, COP having average molecular weight was 35,000 and T_g 207 oC was obtained with a > 90% yield. The effect of monomer concentration, catalyst concentration, amount of 1-hexene, molar ratio between W, aluminum and alcohol on the polymer property were investigated.