Cycloolefin Polymer (COP) Synthesis with Ring Opening Metathesis Polymerization (ROMP)

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A new engineering plastic, cycloolefin polymer (COP) has excellent optical properties as well as good mechanical, flow properties. The major potential applications of COP are substrates for next – generation high density DVDs, flat –panel displays and plastic optical fibers. In this study, ring-opening metathesis polymerization (ROMP) of norbornene (NB) and tetracyclododecene (TCD) monomer was carried out using various catalysts. The catalysts includes a Zigler – type catalyst of titalnium tetrahalide, metathesis – type catalyst of hexacholoride tungsten, and 1st generation Grubbs catalysts. Polymerization yield above 90 % can be obtained without gelation by controlling polymerization conditions.