

### Synthesis and Characterization of TCD-DCPD ROMP Polymer

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Tetracyclododecene (TCD) and dicyclopentadiene (DCPD) copolymer was synthesized through ring-opening metathesis polymerization (ROMP) using  $WCl_6$ , triisobutyl aluminium (iso-Bu<sub>3</sub>Al), and 2-butanol (2-BuOH). The molar ratio of TCD-DCPD/ $WCl_6$  was fixed as 500/1 while the optimal molar ratio of ROMP's catalyst's components depends on TCD-DCPD compositions. After the polymerization, hydrogenation of ring-opened TCD-DCPD copolymer (p-TCD-DCPD) was conducted using Ni(acac)<sub>2</sub> and iso-Bu<sub>3</sub>Al at 80°C under 600 psig H<sub>2</sub>. The resulting hydrogenated TCD-DCPD copolymer (H<sub>2</sub>-p-TCD-DCPD) was characterized using 2D <sup>1</sup>H-<sup>1</sup>H COSY and 2D <sup>1</sup>H-<sup>13</sup>C HSQC NMR spectroscopy. The effect of TCD-DCPD composition over glass transition temperature (T<sub>g</sub>) and polydispersity (PDI) were analyzed using DSC and GPC. The effect of hydrogenation over physical properties such as glass transition temperature, thermal stability, and light transmittance was analyzed using DSC, TGA, and UV.