

Insights: Publications

Oligomerization and polymerization of 5-ethylidene-2-norbornene by cationic palladium and nickel catalysts

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Written by **Alexandra H. Farquhar, Ph.D.**

Nickel- and palladium-based catalyst systems were developed to convert 5-ethylidene-2-norbornene (ENB) to oligomers and polymers with highly controllable molecular weights. Depending on the choice of central metal ion, supporting ligand, and α -olefin chain transfer agent (CTA), ENB-derived materials ranging from dimers (ca. 270 Da) to high molecular weight polymers (>100 000 Da) were prepared. Typical reactions utilized $[(\eta^6\text{-mesitylene})M(\eta^3\text{-2-R-allyl})]^+$ ($M = \text{Pd}$, $R = \text{H}$; $M = \text{Ni}$, $R = \text{Me}$) in dichloromethane solution at ambient temperature, with tertiary phosphine co-ligands and α -olefins controlling the enchainment. Access to oligomers of cycloolefins with $M_n < 2000$ Da is noteworthy, particularly considering that ENB is much less reactive than norbornene itself.

Related People



Alexandra H. Farquhar, Ph.D.

t 404.815.6442

afarquhar@ktslaw.com