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(71) Applicant (for all designated States except US): **NOV-OLEN TECHNOLOGY HOLDINGS C.V.** [NL/NL];
Oostduinlann 75, NL-2596 JJ The Hague (NL).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **KLENDWORTH, Douglas, D.** [US/US]; 9499 Gregg Drive, West Chester, OH 45069 (US).

(74) Agents: **CALDERONE, Adrian, T.** et al.; **DILWORTH & BARRESE, LLP**, 333 Earle Ovington Boulevard, Uniondale, NY 11553 (US).

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(57) Abstract: In one aspect, the invention relates to a method for producing a polymerization catalyst, the method comprising: (a) providing a catalyst support material comprising a magnesium component bound or complexed to a metal oxide component, the magnesium component being either a magnesium (Y) component wherein Y is an alkoxide group or amido group, or an alcohol-adsorbed magnesium halide component; (b) reacting the magnesium component with one or more silane halide compounds to provide a modified catalyst support material containing in situ-generated alkoxysilane or amidosilane electron donor compounds; (c) combining the modified catalyst support material with one or more catalytically active transition metal compounds to provide a catalyst precursor; and d) combining the catalyst precursor with one or more catalytically active main group metal compounds. In another aspect, the invention relates to a method for polymerizing one or a combination of olefins by contacting the one or combination of olefins with the above polymerization catalyst under polymerization conditions.



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