CLAIMS

We claim:

1. A method comprising:

contacting a support material including absorbed water with trimethylaluminum (TMA) in an aliphatic hydrocarbon;

removing the aliphatic hydrocarbon by distillation at a pressure greater than or equal to 0.5 atm;

heating, at a temperature ranging from 25°C to 200°C, a reaction product of the support material and the TMA in a presence of TMA, wherein the TMA includes TMA in an amount of 2-10 mmol TMA per gram of the support material in excess of an amount that reacts with the support material absorbed with water;

impregnating the support material with 2-10 mmol water per gran of the support material; and

removing excess TMA.

2. The method of claim 1, further comprising producing a supported methylaluminoxane without detectable toluene.

3. The method of claim 1, wherein the impregnating comprises impregnating the support material with 2-6 mmol water per gram of the support material, and wherein the heating comprises heating at the temperature ranging from 70ºC to 100ºC.

4. The method of claim 1, wherein the aliphatic hydrocarbon is pentane.

5. The method of claim 1, further comprising prior to the heating step, bringing a temperature of the reaction product of the support material and the TMA to 23°C.

6. The method of claim 1, wherein an amount of TMA on the support material is from 1.0 mmol TMA per gram of support to 12 mmol TMA per gram of support.

7. The method of claim 1, further comprising:

generating a supported methylaluminoxane; and

generating a catalyst system by introducing a catalyst compound to the supported methylaluminoxane.

8. The method of claim 7, wherein the catalyst compound is a metallocene.

9. The method of claim 7, wherein the catalyst compound is not a metallocene.

10. The method of claim 7, further comprising generating a polymer from the catalyst system.

11. The method of claim 1, wherein the removing the aliphatic hydrocarbon is performed before or after the heating of the reaction product.

12. The method of claim 1, wherein the aliphatic hydrocarbon has a boiling point less than or equal to 120°C.

13. A method comprising:

contacting a support material including absorbed water with trimethylaluminum (TMA) in an aliphatic hydrocarbon;

removing the aliphatic hydrocarbon by distillation at a pressure greater than or equal to 0.5 atm;

heating, at a temperature ranging from 25ºC to 200ºC, a reaction product of the support material and the TMA in a presence of TMA, wherein the TMA includes TMA in an amount of 2-10 mmol TMA per gram of the support material in excess of an amount that reacts with the support material absorbed with water; and

removing excess TMA, wherein the contacting is performed at a temperature less than or equal to -5°C with the support material being a silica, dehydrated at greater than or equal to 600°C, that includes 2-6 mmol absorbed water per gram silica, and wherein the heating is performed at a temperature ranging from 70°C to 90°C, with an excess amount of the TMA of 7 mmol per gram silica.