CLAIMS

What is claimed is:

1. A method of producing a supported catalyst, comprising:

introducing a first amount of a porous support material into a catalyst mix vessel;

after introducing the first amount of the porous support material into the catalyst mix vessel, introducing a first amount of a dissolved catalyst solution into the catalyst mix vessel, the dissolved catalyst solution comprising a solvent and one or more catalyst compounds dissolved in the solvent;

operating the catalyst mix vessel to contact the first amount of the dissolved catalyst solution with the first amount of the porous support material;

after operating the catalyst mix vessel to contact the first amount of the dissolved catalyst solution on the first amount of the porous support material, introducing a second amount of the dissolved catalyst solution into the catalyst mix vessel;

after introducing the second amount of the dissolved catalyst solution into the catalyst mix vessel, introducing a second amount of the porous support material into the catalyst mix vessel;

operating the catalyst mix vessel to contact the second amount of the dissolved catalyst solution on the second amount of the porous support material and thereby generate the supported catalyst, the supported catalyst comprising active catalyst adhered to the porous support material; and

discharging the supported catalyst from the catalyst mix vessel.

2. The method of claim 1, wherein the dissolved catalyst solution comprises a metallocene.

3. The method of claim 2, wherein the dissolved catalyst solution further comprises an activator comprising an alkylaluminoxane or modified alkylaluminoxane selected from the group consisting of methylaluminoxane, modified methylaluminoxane, ethylaluminoxane, isobutylaluminoxane, solid polymethylaluminoxane, and any combination thereof, and optionally,

wherein the solvent is selected from the group consisting of a hydrocarbon, an aromatic hydrocarbon, a halogenated hydrocarbon, and any combination thereof.

4. The method of any of the preceding claims, wherein discharging the supported catalyst from the catalyst mix vessel is preceded by drying the supported catalyst within the catalyst mix vessel.

5. The method of any of the preceding claims, wherein the porous support material is selected from the group consisting of silica, glass, talc, clay, alumina, silica-alumina, silica-chromium, magnesium chloride, magnesia, titania, silica-titania, zirconia, iron oxide, boria, calcium oxide, zinc oxide, barium oxide, thoria, montmorillonite, phyllosilicate, aluminum phosphate gel, a polymer, and any combination thereof.

6. A method of producing a supported catalyst, comprising:

introducing a first amount of a porous support material into a catalyst mix vessel;

after introducing the first amount of the porous support material into the catalyst mix vessel, introducing a first amount of a dissolved catalyst solution into the catalyst mix vessel, the dissolved catalyst solution comprising a solvent and one or more catalyst compounds dissolved in the solvent;

operating the catalyst mix vessel to contact the first amount of the dissolved catalyst solution with the first amount of the porous support material;

after operating the catalyst mix vessel to contact the first amount of the dissolved catalyst solution on the first amount of the porous support material, introducing a second amount of the porous support material into the catalyst mix vessel;

after introducing the second amount of the porous support material into the catalyst mix vessel, introducing a second amount of the dissolved catalyst solution into the catalyst mix vessel;

operating the catalyst mix vessel to contact the second amount of the dissolved catalyst solution on the second amount of the porous support material and thereby generate the supported catalyst, the supported catalyst comprising active catalyst adhered to the porous support material; and

discharging the supported catalyst from the catalyst mix vessel.

7. The method of claim 6, wherein the dissolved catalyst solution comprises a metallocene.

8. The method of any of the preceding claims~~claim 7~~, wherein the dissolved catalyst solution further comprises an activator comprising an alkylaluminoxane or modified alkylaluminoxane selected from the group consisting of methylaluminoxane, modified methylaluminoxane, ethylaluminoxane, isobutylaluminoxane, solid polymethylaluminoxane, and any combination thereof, and optionally,

wherein the solvent is selected from the group consisting of a hydrocarbon, an aromatic hydrocarbon, a halogenated hydrocarbon, and any combination thereof.

9. The method of any of ~~claims 6 through 8~~the preceding claims, wherein the porous support material is selected from the group consisting of silica, glass, talc, clay, alumina, silica-alumina, silica-chromium, magnesium chloride, magnesia, titania, silica-titania, zirconia, iron oxide, boria, calcium oxide, zinc oxide, barium oxide, thoria, montmorillonite, phyllosilicate, aluminum phosphate gel, a polymer, and any combination thereof.

10. A method of producing a supported catalyst, comprising:

introducing a dissolved catalyst solution into a catalyst mix vessel, the dissolved catalyst solution comprising a solvent and one or more catalyst compounds dissolved in the solvent;

after introducing the dissolved catalyst solution into the catalyst mix vessel, introducing a porous support material into the catalyst mix vessel;

operating the catalyst mix vessel to contact the dissolved catalyst solution on the porous support material and thereby generate the supported catalyst, the supported catalyst comprising active catalyst adhered to the porous support material; and,

discharging the supported catalyst from the catalyst mix vessel,

wherein the dissolved catalyst solution is added as a first amount and a second amount and the porous support material is added as a first amount and a second amount, and,

either the first amount of the porous support material is added after the first amount of the dissolved catalyst solution, the second amount of the dissolved catalyst solution is added after the first amount of the porous support material, and the second amount of the porous support material is added after the second amount of the dissolved catalyst solution, or,

the first amount of the porous support material is added after the first amount of the dissolved catalyst solution, the second amount of the porous support material is added after the

first amount of the porous support material, and the second amount of the dissolved catalyst solution is added after the second amount of the porous support material.

11. The method of claim 10, wherein the dissolved catalyst solution comprises a metallocene.

12. The method of claim 11, wherein the dissolved catalyst solution further comprises an activator selected from the group consisting an alkylaluminoxane and modified alkylaluminoxane, and optionally,

wherein the alkylaluminoxane or modified alkylaluminoxane is selected from the group consisting of methylaluminoxane, modified methylaluminoxane, ethylaluminoxane, isobutylaluminoxane, solid polymethylaluminoxane, and any combination thereof.

13. The method of any of claims 10 through 12, wherein the solvent is selected from the group consisting of a hydrocarbon, an aromatic hydrocarbon, a halogenated hydrocarbon, and any combination thereof.

14. The method of claim 10, wherein discharging the supported catalyst from the catalyst mix vessel is preceded by drying the supported catalyst within the catalyst mix vessel.

15. The method of any of claims 10 through 14, wherein the porous support material is selected from the group consisting of silica, glass, talc, clay, alumina, silica-alumina, silica-chromium, magnesium chloride, magnesia, titania, silica-titania, zirconia, iron oxide, boria, calcium oxide, zinc oxide, barium oxide, thoria, montmorillonite, phyllosilicate, aluminum phosphate gel, a polymer, and any combination thereof.

~~16. The method of claim 10, wherein the dissolved catalyst solution is added as a first amount and a second amount and the porous support material is added as a first amount and a second amount, and~~

~~wherein the first amount of the porous support material is added after the first amount of the dissolved catalyst solution, the second amount of the dissolved catalyst solution is added after the first amount of the porous support material, and the second amount of the porous support material is added after the second amount of the dissolved catalyst solution.~~

17. The method of claim 10, wherein the dissolved catalyst solution is added as a first amount and a second amount and the porous support material is added as a first amount and a second amount, and

wherein the first amount of the porous support material is added after the first amount of the dissolved catalyst solution, the second amount of the porous support material is added after the first amount of the porous support material, and the second amount of the dissolved catalyst solution is added after the second amount of the porous support material.