In one aspect, there is provided a process for producing a pelletized polymer composition comprising:

polymerizing one or more alpha-olefins in one or more solution reactors thereby producing a molten polymer composition comprising one or more solvents;

removing at least a portion of said one or more solvents in a devolatilization system thereby forming a polymer composition having a low solvent content of less than 1,000 parts of solvent per million of polymer on a weight basis;

removing heat from said polymer composition having low solvent content in a heat exchanger to a temperature in the range T_c to $T_c + 20$ °C, which is lower than 200°C, thereby forming a viscous polymer melt; where T_c represents the crystallization point of the polymer composition; and

pelletizing said viscous polymer melt via an underwater pelletizer thereby forming said pelletized polymer composition.

In an alternative embodiment, the instant disclosure further provides a pelletized polymer composition produced via the inventive process, wherein each pelletized polymer composition has diameter in the range of from less than 6 mm.

In an alternative embodiment, the instant disclosure provides a process for producing a pelletized polymer composition and a pelletized polymer composition, in accordance with any of the preceding embodiments, except that the alpha-olefin is ethylene, propylene, or combinations thereof.

In an alternative embodiment, the instant disclosure provides a process for producing a pelletized polymer composition and a pelletized polymer composition, in accordance with any of the preceding embodiments, except that the pelletized polymer composition has a viscosity of less than 100,000 cP at 177° C as measured according to ASTM D1084.

Brief Description of the Drawings

For the purpose of illustrating the invention, there is shown in the drawings a form that is exemplary; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

Fig. 1 is a diagram illustrating a first embodiment of the present invention.

We Claim:

1. A process for producing a pelletized polymer composition comprising:

polymerizing one or more alpha-olefins in one or more solution reactors thereby producing a molten polymer composition comprising one or more solvents;

removing at least a portion of said one or more solvents in a devolatilization system thereby forming a polymer composition having a low solvent content of less than 1,000 parts of solvent per million of polymer on a weight basis;

removing heat from said polymer composition having low solvent content in a heat exchanger to a temperature in the range T_c to $T_c + 20$ °C, which is lower than 200 °C, thereby forming a viscous polymer melt; where T_c represents the crystallization point of the polymer composition; and

pelletizing said viscous polymer melt via an underwater pelletizer thereby forming said pelletized polymer composition.

2. The process of claim 1, for producing a pelletized polymer composition, wherein said alpha-olefin is ethylene, propylene, or combinations thereof.