In specific embodiments, the catalyst is any one of the molecular catalysts disclosed in U.S. Patent No. 6420507 and WO 9715583~~, the disclosures of which are incorporated herein by reference~~.

In some embodiments, the first ethylene-based solvent reactor is a solution polymerization reactor. Alternatively, the first ethylene-based solvent reactor may be a slurry polymerization reactor.

In some embodiments, the second ethylene-based solvent reactor is a solution polymerization reactor. Alternatively, the second ethylene-based solvent reactor may be a slurry polymerization reactor.

The first and second ethylene-based solvent polymerization reactors may be the same reactor. In alternative embodiments, the first and second ethylene-based solvent polymerization reactors may be different reactors.

The first ethylene-based solvent polymerization reactor may be selected from the group consisting of one or more loop reactors, isothermal reactors, pipe flow reactors, stirred tank reactors, batch reactors, in parallel or series, and/or any combinations thereof.

The second ethylene-based solvent polymerization reactor may be selected from the group consisting of one or more loop reactors, isothermal reactors, pipe flow reactors, stirred tank reactors, batch reactors, in parallel or series, and/or any combinations thereof.

Purification beds which may be used in the inventive process include any vessel capable for holding the adsorbent. Exemplary suitable vessels include tanks, tubes, and drums. In some embodiments, the purification beds further include a screen to keep the adsorbent in the bed. Purification bed useful in the invention may be configured to accept the solvent by any appropriate means, including for example, of direct or indirect fluid communication with the polymerization reactor(s). In alternative embodiments, the purification beds are not in fluid communication with the polymerization reactor(s) and the solvent stream is batchwise transferred to the purification beds.

Adsorbents useful in the invention include alumina-zeolite composites having a low reactivity to alkenes. One example of such an adsorbent is available from UOP as AZ-300, which is an alumina-zeolite composite or hybrid, comprising an alkali aluminum silicate, having the general formula $Na_x[(AlO_2)_x(SiO_2)_y] \cdot z\ H_2O$ hybrid with alumina.

Table 4

	First Reactor Temperature (°C)	Second Reactor Temperature (°C)	Al:Ti Ratio	Acid Scavenger
Inv. Ex. 1 Fig. 1	170	186.8	4.0	DHT-4A
Inv. Ex. 2 Fig. 2	202	220.9	3.0	DHT-4A
Inv. Ex. 3 Fig. 3	187	202.9	3.7	DHT-4A
Inv. Ex. 4 Fig. 4	174	193.1	4.0	DHT-4A

In Comparative Example 1, bed 1 contains MOLSIV-13X (illustrated by triangles in each Figures 5) and bed 2 contains AZ-300 (illustrated by large circles in each of Figures 5). In Comparative Example 1, bed 1 is being brought online and bed 2 is being taken offline. The catalyst efficiency is illustrated by a line with small circles in Fig. 5. As can be seen in Fig. 5, when the MOLSIV-13X purification bed is brought online, the polymerization reaction experiences a 33% catalyst efficiency dip.

In Comparative Example 2, bed 1 and bed 2 each contained MOLSIV-13X. Fig. 6 illustrates the catalyst efficiency when bed 1 is swapped with bed 2 for Comparative Example 2. As can be seen in Fig. 6, a 25% catalyst efficiency dip was observed. Table 5 provides the process conditions for each of Comparative Examples 1 and 2.

Table 5

	First Reactor Temperature (°C)	Second Reactor Temperature (°C)	Al:Ti Ratio	Acid Scavenger
Comp. Ex. 1 Fig. 5	187	203.2	3.4	DHT-4A
Comp. Ex. 2 Fig. 6	174	189.3	3.7	DHT-4A

~~All applications, publications, patents, test procedures, and other documents cited, including priority documents, are fully incorporated by reference to the extent such disclosure is~~

~~not inconsistent with the disclosed processes and systems and for all jurisdictions in which such incorporation is permitted.~~

Depending upon the context in which such values are described, and unless specifically stated otherwise, such values may vary by 1 percent, 2 percent, 5 percent, or, sometimes, 10 to 20 percent. Whenever a numerical range with a lower limit, RL, and an upper limit, RU, is disclosed, any number falling within the range, including the limits themselves is specifically disclosed. In particular, the following numbers within the range are specifically disclosed: R=RL+k*(RU-RL), wherein k is a variable ranging from 0.01 to 1.00 with a 0.01 increment, that is, k is 0.01 or 0.02 to 0.99 or 1.00. Moreover, any numerical range defined by two R numbers as defined is also specifically disclosed.

~~The present invention may be embodied in other forms without departing from the spirit and the essential attributes thereof, and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification, as indicating the scope of the invention.~~