CLAIMS

We claim:

1. A process for producing a molecular sieve material, said process comprising the steps:

(a) mixing water, at least one source of an oxide of a tetravalent element, and optionally a trivalent element, and at least one structure directing agent in a plough shear mixer/dryer/reactor equipped with a mixer having a Froude number of at least 1, to produce a molecular sieve synthesis mixture having a solids content of at least 20 wt%;

(b) heating the molecular sieve synthesis mixture in the plough shear mixer/dryer/reactor while agitating the mixture with said mixer to form crystals of said molecular sieve material; and then

(c) recovering the molecular sieve crystals from the plough shear mixer/dryer/reactor.

2. The process of claim 1 and further comprising the step:

(d) prior to step (c), removing water from the mixture in the plough shear mixer/dryer/reactor while agitating the mixture with the mixer so as to decrease the water content of the mixture inside the plough shear mixer/dryer/reactor by at least 5 wt% and produce a partially dried mixture.

3. The process of claim 2, wherein said removing step (d) is conducted after formation of the crystals of said molecular sieve material.

4. The process of claim 2, wherein said removing step (d) is conducted by applying heat to said molecular sieve synthesis mixture.

5. The process of claim 2, wherein said removing step (d) is conducted by reducing the pressure in said plough shear mixer/dryer/reactor.

6. The process of claim 3 and further comprising the step:

(e) mixing said partially dried mixture with an additional particulate

material to produce a product mixture.

7. The process of claim 6, wherein said additional particulate material is a catalyst formulation component.

8. The process of claim 7, wherein said additional particulate material is a binder or matrix material.

9. The process of claim 6, wherein said mixing step (e) is conducted in the plough shear mixer/dryer/reactor.

10. The process of claim 6, wherein said mixing step (e) is conducted in a separate mixer.

11. The process of claim 6 and further comprising the step:

(f) extruding said recovered product mixture into a shaped body.

12. The process of claim 1 and further comprising the step:

(d) calcining the recovered molecular sieve crystals without subjecting the crystals to an initial filtration and/or washing step.

13. The process of claim 1, wherein the plough shear mixer/dryer/reactor has a capacity of at least 5 liters.

14. The process of claim 1, wherein the mixer comprises at least one blade located on a shaft rotatable about an axis oriented at no more than 10° from horizontal.

15. The process of claim 1, wherein the molecular sieve material comprises ZSM-5 or MCM-41.