CLAIMS:

We Claim:

1. A method for manufacturing synthetic porous crystalline MCM-56 material comprising the steps of:

a) preparing a first reaction mixture containing sources of alkali or alkaline earth metal (M) cation, an oxide of a trivalent element X, an oxide of a tetravalent element Y, zeolite seed crystals, and water, said first reaction mixture having a composition in terms of mole ratios of oxides within the following ranges:

YO_2/X_2O_3= 5 to 35;

H_2O/YO_2 = 10 to 70;

OH^-/YO_2 = 0.05 to 0.20;

M/YO_2 = 0.05 to 3.0;

said first reaction mixture further comprising zeolite seed crystals in an amount from greater than or equal to 0.05 wt. % to less than or equal to 5 wt. %, based on the weight of said first reaction mixture;

b) adding directing agent R to the reaction mixture of step a) to form a second reaction mixture, having said directing agent R in terms of a mole ratio within the following range: R/YO_2 = 0.08 to 0.3; and

c) crystallizing said second reaction mixture of step b) under conditions of temperature of from about 90°C to about 175°C and a time for less than 90 hours to form a resulting mixture comprising crystals of said MCM-56 material and less than 10 wt. % non-MCM-56 impurity crystals based on the total weight of said MCM-56 crystals in said second reaction mixture, as identified by X-ray diffraction.~~; and~~

~~d) separating and recovering at least a portion of said crystals of said MCM-56 material from said resulting mixture of step c),~~

wherein said crystals of said MCM-56 material has an X-ray diffraction pattern as shown in Table 1:

Table 1

Interplanar d-Spacing (Angstroms)	Relative Intensity
12.4±0.2	vs.
9.9±0.3	m
6.9±0.1	w
6.4±0.3	w
6.2±0.1	w
3.57±0.07	m-s
3.44±0.07	vs.

2. The method of claim 1, wherein said amount of said zeolite seed crystals in said first reaction mixture is in the range of greater than or equal to 0.10 wt. % to less than or equal to 3 wt. %, ~~or greater than or equal to 0.50 wt. % to less than or equal to 3 wt. %,~~ based on the weight of the first reaction mixture.

3. The method of ~~any preceding~~ claim 1, wherein said directing agent R is selected from the group consisting of cyclopentylamine, cyclohexylamine, cycloheptylamine, hexamethyleneimine (HMI), heptamethyleneimine, homopiperazine, and combinations thereof.

4. The method of ~~any preceding~~ claim 1, wherein said directing agent R comprises hexamethyleneimine (HMI), X comprises aluminum and Y comprises silicon.

5. The method of ~~any preceding~~ claim 1, wherein said resulting mixture of step c) comprises less than or equal to about 5 wt. % non-MCM-56 impurity crystals, based on the total weight of said MCM-56 crystals in said second reaction mixture, as identified by X-ray diffraction.

6. The method of ~~any preceding~~ claim 1, wherein said first reaction mixture has a composition in terms of mole ratios of oxides within the following ranges:

YO_2/X_2O_3= 15 to 20;

H_2O/YO_2 = 15 to 20;

OH^-/YO_2 = 0.1 to 0.15;

M/YO_2 = 0.11 to 0.15;

said first reaction mixture further comprising zeolite seed crystals in an amount from greater than or equal to 1 wt.% to less than or equal to 3 wt. %, based on the weight of said first reaction mixture;

and step b) comprises adding hexamethyleneimine (HMI) as said directing agent R to said first reaction mixture to form a second reaction mixture having HMI in terms of a mole ratio within the range of: HMI/YO_2 = 0.1 to 0.2.

7. The method of ~~any preceding~~ claim 1, wherein said conditions of crystallizing step c) include crystallizing said second reaction mixture for less than 40 hours.

8. The method of ~~any preceding~~ claim 1, wherein said conditions of crystallizing step c) include a temperature of from about 125°C to about 175°C for from about 20 to about 75 hours.

9. The method of ~~any preceding~~ claim 1, wherein said second reaction mixture of step b) has a solids content of less than 30 wt. % based on the weight of said second reaction mixture.

10. The method of ~~any preceding~~ claim 1, wherein said zeolite seed crystals exhibit the X-ray diffraction pattern for an MCM-22 family material.

11. The method of ~~any preceding~~ claim 1, wherein said zeolite seed crystals exhibit said X-ray diffraction pattern for said MCM-56 crystals as set forth in Table 1.

12. The method of ~~any preceding~~ claim 1, wherein said second reaction mixture of step b) is aged prior to crystallizing step c) for from about 0.5 to about 48 hours at a temperature of from about 25 to about 75°C.

13. The method of ~~any preceding~~ claim 1, further comprising the step of:

d) separating and recovering at least a portion of said crystals of said MCM-56 material from said resulting mixture of step c).

wherein said crystals of MCM-56 from step d) are thermally treated by heating at a temperature of from about 370°C to about 925°C for a time of from 1 minute to about 20 hours to form calcined MCM-56 crystals,

wherein said calcined MCM-56 crystals have an X-ray diffraction pattern as shown in Table 2:

Table 2

Interplanar d-Spacing (Angstroms)	Relative Intensity
12.4±0.2	vs.
9.9±0.3	m
6.9±0.1	w
6.2±0.1	w
3.55±0.07	m-s
3.42±0.07	vs.

14. The method of ~~any preceding~~ claim 1, wherein said non-MCM-56 impurity crystal is selected from ~~non-MCM-56 materials selected from~~ the group consisting of MCM-22, MCM-49, ITQ-1, ITQ-2, PSH-3, SSZ-25, ERB-1, UZM-8 and UZM-8HS and mixtures thereof.

15. The method of ~~any preceding~~ claim 1, wherein said non-MCM-56 impurity crystal is selected from the group consisting of ferrierite, kenyaite and mixtures thereof.

~~16. A catalyst composition comprising said crystals of MCM-56 from step d) of claim 1.~~

~~17. A catalyst composition comprising said thermally treated calcined MCM-56 crystals of claim 13.~~

~~18. The catalyst composition of claim 16, wherein said catalyst composition is thermally treated by heating at a temperature of from about 370°C to about 925°C for a time of from 1 minute to about 20 hours, and further comprising a binder selected from the group consisting of clay, silica, metal oxide and mixtures thereof.~~

~~19. The catalyst composition of claims 16-18, further comprising a binder selected from the group consisting of clay, silica, metal oxide and mixtures thereof.~~

~~20. A process for converting feedstock comprising hydrocarbon compounds to conversion product which comprises contacting said feedstock at hydrocarbon compound conversion conditions with said catalyst composition of claim 16.~~

~~21. The process of claim 20, wherein said feedstock comprises olefins, said conversion product comprises oligomerized olefins, and said hydrocarbon compound conversion conditions include a temperature of from about 0°C to about 1000°C, a pressure from about 0.1 to about 1000 atmospheres, and a feed weight hourly space velocity (WHSV) of from about 0.01 to 500 hr^{-1}.~~

~~22. The process of claim 20, wherein said feedstock comprises an alkylatable aromatic compound and an alkylating agent selected from the group consisting of olefins, alcohols, aldehydes, alkyl halides and combinations thereof, and said hydrocarbon compound conversion conditions include a temperature of from about 0°C to about 500°C, a pressure from about 0.2 to about 250 atmospheres, a molar ratio of alkylatable aromatic compound to alkylating agent of from about 0.1:1 to about 50:1, and a feed weight hourly space velocity (WHSV) based on said alkylating agent of from about 0.1 to 500 hr^{-1}.~~

~~23. The process of claim 22, wherein said alkylatable aromatic compound is benzene, said alkylating agent is an olefin selected from the group consisting of ethylene, propylene and combinations thereof.~~

~~24. The process of claim 21, wherein said olefin is ethylene, said conversion product comprises ethylbenzene, and said hydrocarbon compound conversion conditions include a temperature of from about 150°C to about 300°C, a pressure from about 20 to about 55 atmospheres, a weight hourly space velocity (WHSV) based on said ethylene alkylating agent of from about 0.1 to about 20 hr^{-1}, and a ratio of benzene to ethylene in a alkylation reactor of from about 0.5:1 to about 100:1 molar.~~

~~25. The process of claim 21, wherein said olefin is propylene, said conversion product comprises cumene, and said hydrocarbon compound conversion conditions include a temperature of up to about 250°C, a pressure of about 250 atmospheres or less, a weight hourly space velocity (WHSV) based on propylene alkylating agent of from about 0.1 hr^{-1} to about 250 hr^{-1}, and a ratio of benzene to propylene in a alkylation reactor of from about 0.5:1 to about 100:1 molar.~~