WHAT IS CLAIMED IS:

1. A method comprising:

   treating a gel solution by a hydrothermal treatment, to form a Zn-Si or Fe-Si zeolite having an MWW framework, wherein said gel solution comprises water, a silicon source, a zinc or iron source, and an MWW-templating agent,

   wherein a molar ratio of said silicon source to said zinc or iron source in said gel solution is from 7:1 to 20:1; or wherein said gel solution comprises about 20 wt% of said silicon source and about 3 to about 4 wt% of said zinc or iron source, based on a total weight of said gel solution, and

   wherein said MWW framework is substantially free of aluminum.

2. The method of claim 1, wherein said gel solution is maintained at a first temperature to dissolve said silicon source and said zinc or iron source in said gel solution; and said hydrothermal treatment comprises heating the gel solution with the dissolved silicon source and zinc or iron source at a second temperature above the first temperature, to induce hydrothermal crystallization in said gel solution, thus forming a crystalline Zn-Si or Fe-Si zeolite having said MWW framework.

3. The method of claim 2, wherein said first temperature is in the range from room temperature to about 70 °C; and said second temperature is in the range from about 140 °C to about 160 °C.

4. The method of claim 2 or claim 3, wherein said gel solution is heated at said first temperature for a period of up to about 24 hours, and at said second temperature for a period of 1 to 6 weeks.

5. The method of any one of claims 1 to 4, wherein said MWW-templating agent comprises a hexamethyleneimine.

6. The method of any one of claims 1 to 5, wherein said silicon source is selected from colloidal silica, fumed silica, silicon oxides, silicates, and mixtures thereof; and wherein said zinc or iron source is selected from zinc nitrates, zinc halides, zinc sulfates, zinc carbonates, zinc alkoxides, and mixtures thereof.

7. The method of any one of claims 1 to 6, wherein said gel solution comprises a base.

8. The method of claim 7, wherein said base comprises sodium hydroxide.

9. The method of any one of claims 1 to 8, wherein said gel solution has a pH value of above 7 before said hydrothermal treatment.

10. The method of any one of claims 1 to 9, wherein said gel solution comprises seeds having an MWW framework.

11. The method of any one of claims 1 to 10, wherein said Zn-Si or Fe-Si zeolite is a Zn-Si zeolite, and said zinc or iron source is a zinc source.

12. A zeolite prepared according to the method of any one of claims 1-11, characterized by an x-ray diffraction pattern comprising the following peaks:

d-value (Å)	2-θ (degree)	Relative Intensity
12.4	7.2	High
11.1	8.0	High
8.85	10.0	Medium
6.17	14.3	Medium
3.91	22.7	Medium
3.42	26.1	Medium

13. A zeolite prepared according to the method of any one of claims 1-11, characterized by an x-ray diffraction pattern comprising the following peaks:

d-value (Å)	2-θ (degree)	Relative Intensity
11.2	7.9	High
10.1	8.8	Medium
6.87	12.9	Low
5.85	15.1	Low
4.00	22.2	Medium
3.35	26.6	Low

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14. A catalyst comprising the zeolite of any one of claims 12 to 13.

15. The catalyst of claim 14 for use in catalyzing an activation, oxidehydrogenation, or dehydrogenation reaction.

16. A separation or purification device comprising the zeolite of any one of claims 12 to 13.