Claims

1. A SCM-34 molecular sieve, characterized in that the SCM-34 molecular sieve comprises aluminum, phosphorus, oxygen and optionally silicon; in XRD diffraction data of the molecular sieve as synthesized, a 2θ degree of the strongest peak within the range of 5-50° is 7.59 ± 0.2; an X-ray diffraction pattern of the SCM-34 molecular sieve includes X-ray diffraction peaks shown in the following table:

2θ (°)	relative intensity, [(I/I$_0$)×100]
7.59±0.2	100
10.81±0.1	5-50
16.52±0.1	5-50
17.97±0.1	5-50
23.34±0.05	5-50

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2. The SCM-34 molecular sieve according to claim 1, characterized in that the SCM-34 molecular sieve has a schematic chemical composition as shown in the formula "Al_2O_3: xSiO_2: yP_2O", wherein $0 \leq x \leq 0.5$, $0.75 \leq y \leq 1.5$; in the XRD diffraction data of the molecular sieve, the 2θ degree of the strongest peak within the range of 5-50° is 7.59 ± 0.2; the X-ray diffraction pattern of the SCM-34 molecular sieve includes the X-ray diffraction peaks shown in the following table:

2θ (°)	relative intensity, [(I/I$_0$)×100]
7.59±0.2	100
10.81±0.1	5-50
16.52±0.1	5-50
17.97±0.1	5-50
23.34±0.05	5-50

34.74±0.05	5-50

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3. The molecular sieve according to claim 1 or 2, characterized in that the X-ray diffraction pattern of the SCM-34 molecular sieve further includes the X-ray diffraction peaks shown in the following table:

2θ (°)	relative intensity, $[(I/I_0)\times100]$
14.25±0.1	5-50
21.01±0.1	10-20
24.27±0.05	5-50
26.05±0.05	5-50
27.82±0.05	5-50
28.15±0.02	5-50
30.03±0.02	5-50

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4. The molecular sieve according to any one of claims 1-3, characterized in that the X-ray diffraction pattern of the SCM-34 molecular sieve further includes the X-ray diffraction peaks shown in the following table:

2θ (°)	relative intensity, $[(I/I_0)\times100]$
10.33±0.1	10-20
12.09±0.1	5-50
19.77±0.1	5-50
31.33±0.01	5-50
38.29±0.01	5-50

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5. A method of preparing the SCM-34 molecular sieve according to any one of claims 1-4, comprising: crystallizing a mixture containing an

aluminum source, a phosphorus source, an organic template R1 and an organic template R2, a solvent S1, a solvent S2 and a solvent S3, and optionally a silicon source to obtain a SCM-34 molecular sieve;

wherein the organic template R1 is selected from one or more of quaternary ammonium salts and/or quaternary ammonium bases; the organic template R2 is selected from one or more of imidazole, pyrrolidine, and derivatives thereof; the solvent S1 is selected from one or more of amide group solvents; the solvent S2 is selected from one or more of the cyclic organic solvents; the solvent S3 is selected from one or more of water and lower alcohols, wherein the organic template R1 and the organic template R2 represent different organic templates from each other, and the solvent S1, the solvent S2 and the solvent S3 represent different solvents from each other.

6. The method according to claim 5, characterized in that the organic template R1 is selected from one or more of tetraethylammonium bromide, tetraethylammonium hydroxide, tetrapropylammonium bromide, tetrapropylammonium hydroxide, tetrabutylammonium bromide, tetrabutylammonium hydroxide; the organic template R2 is selected from one or more of imidazole, 2-methylimidazole, 4-methylimidazole, 1- (3-aminopropyl) imidazole, 2-ethyl-4-methylimidazole, pyrrolidine, 1- (3-pyrrolidine) pyrrolidine, N-ethyl-2-aminomethylpyrrolidine; the solvent S1 is selected from one or more of N, N-dimethylformamide, N, N-dimethylacetamide, N, N-diethylformamide and N, N-dibutylformamide; the solvent S2 is selected from one or more of 1,4-dioxane, cyclohexane, cyclohexanone and cyclohexanol; and/or, the solvent S3 is selected from one or more of methanol, ethanol, ethylene glycol, butanol and water.

7. The method according to claim 5 or 6, characterized in that in the mixture, the molar constitution of the aluminum source based on Al_2O_3, the silicon source based on SiO_2, the phosphorus source based on P_2O_5, the organic templates R1+R2, the solvents S1+S2+S3 is as follows:

SiO_2/Al_2O_3=0~1, preferably 0.1~0.75; P_2O_5/Al_2O_3=0.5~2, preferably 0.75~1.5; templates R1+R2/Al_2O_3=1~200, preferably 5~50; solvents S1+S2+S3/Al_2O_3=5~500, preferably 35~120.

8. The method according to any one of claims 5-7, characterized in that the molar ratio of the organic template R1 to the organic template R2 is 0.01~1:1, preferably 0.1~0.25:1; the molar ratio of the solvent S1, the solvent S2 and the solvent S3 is 1:0.01~1:1~100, preferably 1:0.05~0.5:10~80.

9. The method according to any one of claims 5-8, characterized in that the conditions for the crystallization treatment include: crystallization temperature of 120~200 ℃, preferably 140~180 ℃, more preferably 140~160 ℃; crystallization time of 1-5 days, preferably 3-5 days, more preferably 4-5 days.

10. A molecular sieve composition, characterized in that it includes the molecular sieve according to any one of claims 1-4, and a binder.

11. Use of the molecular sieve according to any one of claims 1-4 or the molecular sieve prepared by the method according to any one of claims 5-9 in the preparation of a metal containing AFI type molecular sieve or an SAPO-17 molecular sieve.

12. A method of preparing a metal containing AFI type molecular sieve includes: using the molecular sieve according to any one of claims 1-4 or the molecular sieve prepared by the method according to any one of claims 5-9 as reactant raw material, mixing it with a solvent SI, an organic template R, an optionally added first silicon source to prepare a precursor A, and then mixing the precursor A with a solvent SII, a metal source, an optionally added second silicon source to prepare the AFI molecular sieve,

wherein the organic template R is an organic amine, which is selected

from at least one of tetraethylammonium bromide, tetraethylammonium hydroxide, tetrapropylammonium bromide, tetrapropylammonium hydroxide, tetrabutylammonium bromide, tetrabutylammonium hydroxide, benzyltriethylammonium chloride, benzyltrimethylammonium hydroxide, triethylamine, n-butylamine, di-n-propylamine, diisopropylamine, ethylenediamine and ethylamine,

wherein the solvent SI or the solvent SII is each independently selected from at least one of N, N-dimethylformamide, N, N-dimethylacetamide, ethylene glycol, ethanol and water,

wherein the metal source is selected from at least one of nitrate, sulfate and acetate of an alkaline earth metal and/or transition metal element.

13. A method of preparing an SAPO-17 molecular sieve, including:

1) mixing an organic template cR and a first organic solvent cS for a first heat treatment to obtain a precursor P;

2) mixing the SCM-34 molecular sieve according to the present invention, an optionally added silicon source with a second organic solvent cS for a second heat treatment to obtain a mixture material M;

3) mixing the precursor P obtained in step 1) with the mixture material M obtained in step 2) to form a mixture to be crystallized;

4) pretreating the mixture to be crystallized obtained in step 3), and then carrying out a crystallization reaction to obtain the SAPO-17 molecular sieve,

wherein the organic template cR is at least one of 1,10-phenanthroline, 2,2-bipyridine, 4,4-bipyridine, piperazine, cyclohexylamine and pyridine,

wherein the first organic solvent cS and the second organic solvent cS are each independently selected from at least one of tetrahydrofuran, 2-methyltetrahydrofuran, 1,2-epoxycyclopentane, 1, 4-dioxane, cyclohexanone, cyclohexanol.

14. Use of the SAPO-17 molecular sieve obtained by the method according to claim 13 in the reaction of syngas-to-hydrocarbon.