Supplementary Information

The first synthesis of organosilyl-substituted aluminophosphate molecular sieves

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Table S1 Compositions of as-synthesized Me-Si-$AlPO_4$-5 and organosilyl VPI-5 samples calculated from ICP-AES analysis.

OAS	Al_2O_3	P_2O_5	$(R)SiO_{1.5}$
MeSi-$AlPO_4$-5			
0.6	1	1.02	0.08
0.8	1	0.97	0.13
1.0	1	0.98	0.18
MeSi-VPI-5			
0.1	1	0.99	0.021
0.2	1	1.05	0.038
bisSi-VPI-5			
0.05	1	0.99	0.037
0.10	1	1.01	0.084
0.15	1	0.99	0.096

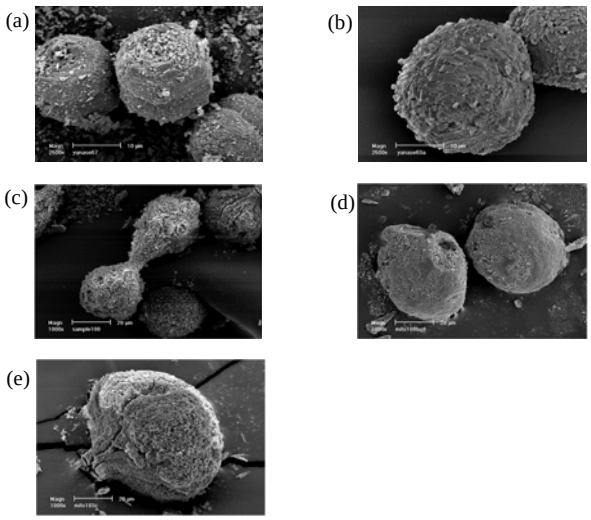

Fig. S1 SEM images of: (a) SAPO-5 (0.6TEOS), (b) MeSi-$AlPO_4$-5 (0.6MTES), (c) VPI-5, (d) bisSi-VPI-5 (0.15BTESM), (e) MeSi-VPI-5 (0.15MTES).

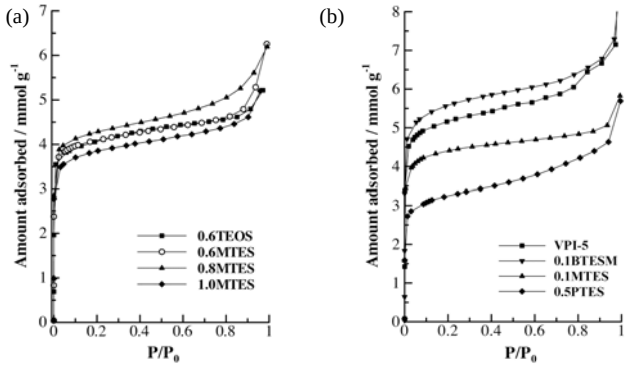

Fig. S2 Nitrogen adsorption isotherms at 77 K of: organosilyl-substituted (a) $AlPO_4$-5 and (b) VPI-5.

Preparation procedures of the organosilyl-substituted $AlPO_4$-5 and VPI-5

Organosilyl-substituted $AlPO_4$-5

The composition of the starting gel for AFI synthesis was $xOAS{\cdot}1Al_2O_3{\cdot}(1.3\text{-}x/2)P_2O_5{\cdot}1Et_3N{\cdot}40H_2O$ (x=0.6–2.0). The gel was typically prepared as follows: A mixture of pseudo-boehmite and water were stirred for 5 min. After phosphoric acid was added, the mixture was stirred for 60 min. After Et_3N was added, the mixture was stirred for 90 min. After an organoalkoxysilane was added, the mixture was stirred for 10 min. The gel was hydrothermally reacted at 200°C for 18 h in a Teflon-lined autoclave. The template occluded in the product was removed with HCl/MeOH at 100°C for 20 h in a Teflon-lined autoclave.

Organosilyl-substituted VPI-5

The composition of the starting gel for VFI synthesis was $x{\rm OAS}{\cdot}1Al_2O_3{\cdot}1P_2O_5{\cdot}1Pr_2NH{\cdot}40H_2O$ (x=0.1–0.5). The gel was typically prepared as follows: A mixture of pseudo-boehmite and water were stirred for 30 min. After phosphoric acid was added, the mixture was stirred for another 30 min. After the gel was aged for 24 h at an ambient temperature, Pr_2NH was added and stirred for 1 h. After an organoalkoxysilane was added, the mixture was stirred for 2 h. The gel was hydrothermally reacted at 140°C for 24 h in a Teflon-lined autoclave. The template occluded in the product was removed with HCl/MeOH at 100°C for 16 h in a Teflon-lined autoclave.