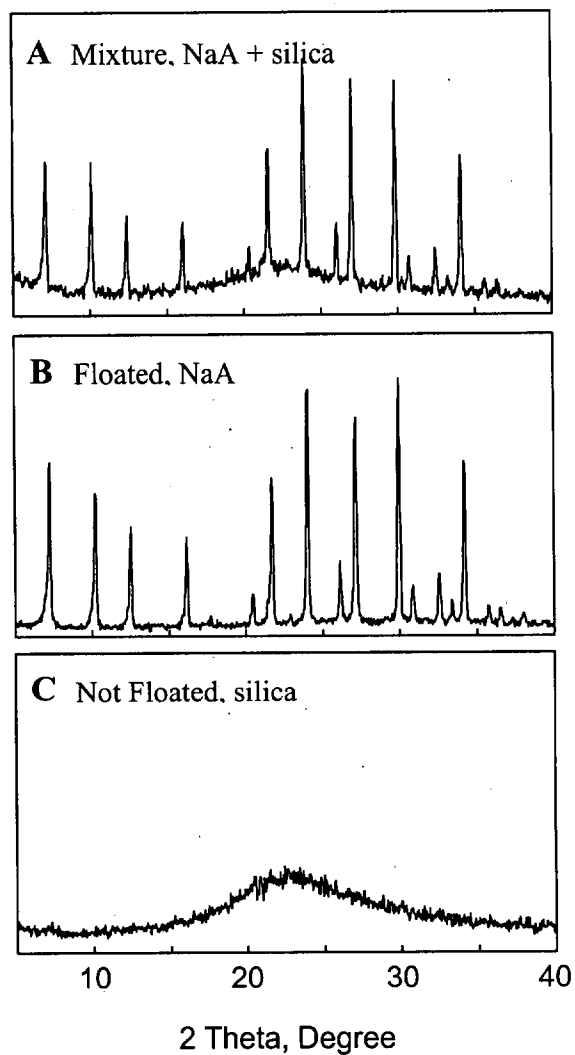


### Supporting Information ( $^1\text{H}$ NMR Data)

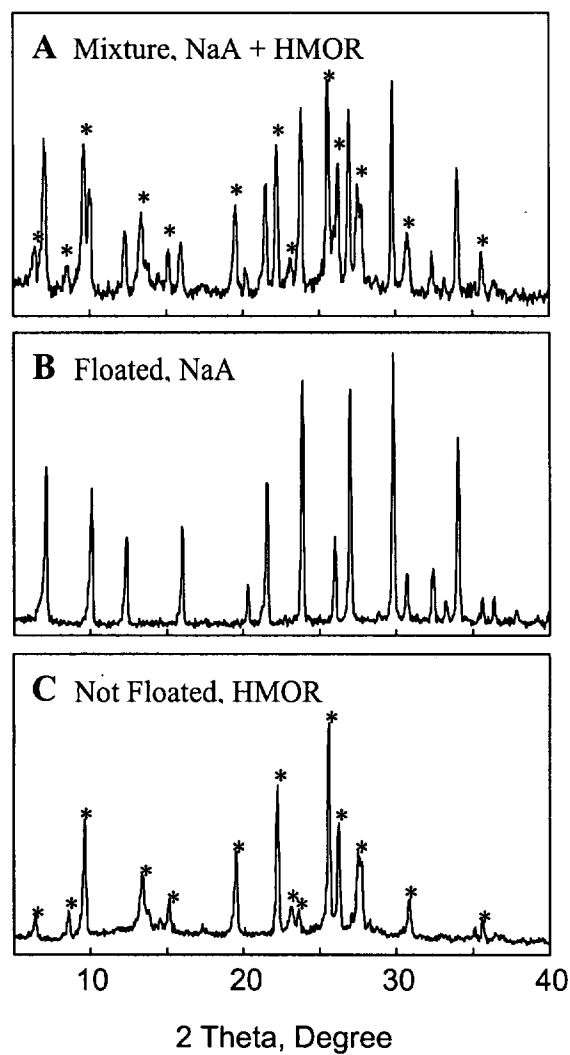
The chemical shifts ( $\delta$ ) of the following  $^1\text{H}$  NMR data are reported in ppm using  $\text{CDCl}_3$  as the solvent.  $\text{C}_8\text{P}^+\text{I}^-$ : 9.44 (d, 2H), 8.64 (t, 1H), 8.59 (t, 2H), 4.95 (t, 2H), 2.07 (m, 2H), 1.18-1.42 (12H), 0.86 (t, 3H).  $\text{C}_{10}\text{P}^+\text{I}^-$ : 9.38 (d, 2H), 8.58 (t, 1H), 8.16 (t, 2H), 4.92 (t, 2H), 2.03 (m, 2H), 1.20-1.32 (14H), 0.84 (t, 3H).  $\text{C}_{12}\text{P}^+\text{I}^-$ : 9.39 (d, 2H), 8.59 (t, 1H), 8.18 (t, 2H), 4.95 (t, 2H), 2.03 (m, 2H), 1.20-1.42 (18H), 0.87 (t, 3H).  $\text{C}_{16}\text{P}^+\text{I}^-$ : 9.37 (d, 2H), 8.58 (t, 1H), 8.17 (t, 2H), 4.96 (t, 2H), 2.05 (m, 2H), 1.18-1.36 (26H), 0.88 (t, 3H).  $\text{C}_{12}\text{Q}^+\text{I}^-$ : 10.36 (d, 1H), 9.09 (d, 1H), 8.32 (t, 1H), 8.20 (t, 2H), 7.98 (t, 2H), 5.33 (t, 2H), 2.10 (m, 2H), 1.10-1.60 (18H), 0.87 (t, 3H).  $\text{C}_{12}\text{CP}^+\text{I}^-$ : 9.39 (d, 2H), 8.59 (t, 1H), 8.18 (t, 2H), 4.95 (t, 2H), 2.03 (m, 2H), 1.20-1.42 (18H), 0.87 (t, 3H).  $\text{C}_{12}\text{TBA}^+\text{I}^-$ : 3.35 (t, 8H), 1.66 (m, 8H), 1.24-1.50 (m, 24H), 1.01 (t, 9H), 0.87 (t, 3H).

Supporting Information (Figure 1)



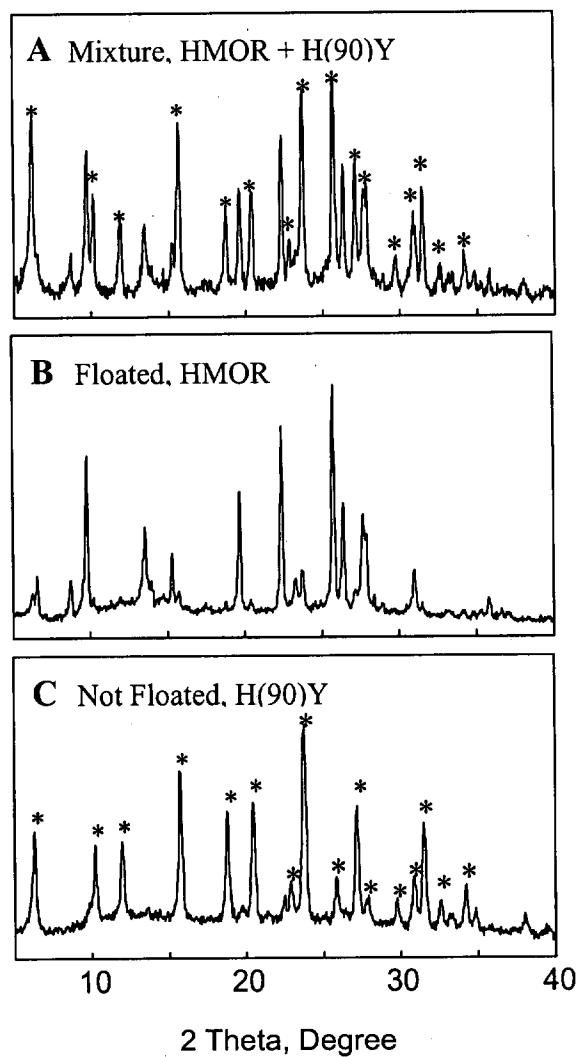
X-ray powder diffraction patterns of the mixture of NaA and silica (A), the particles that floated (B), and the particles that did not float (C), respectively.

Supporting Information (Figure 2)



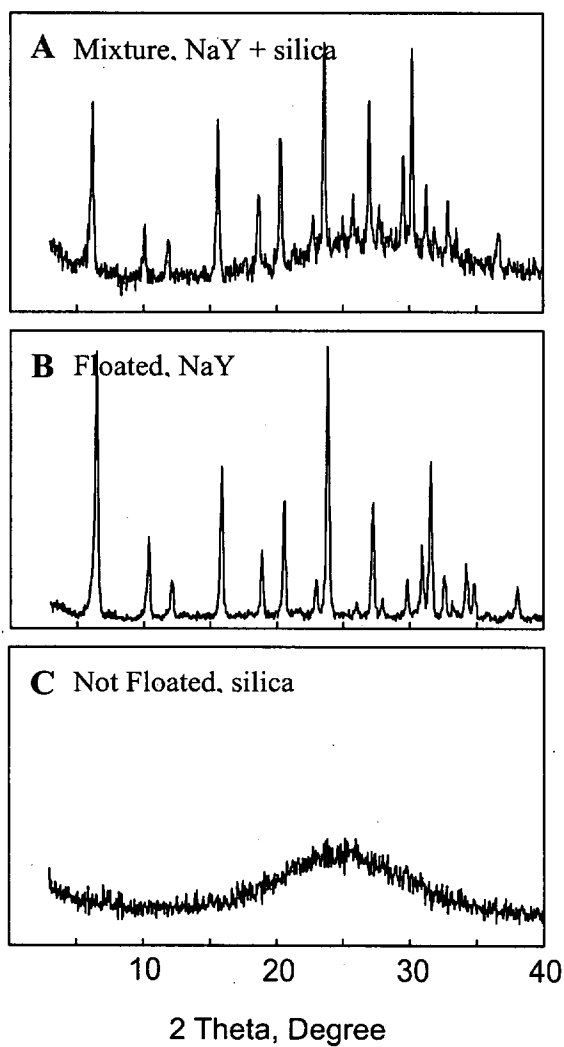
X-ray powder diffraction patterns of the mixture of NaY and HMOR (A), the particles that floated (B), and the particles that did not float (C), respectively.

Supporting Information (Figure 3)



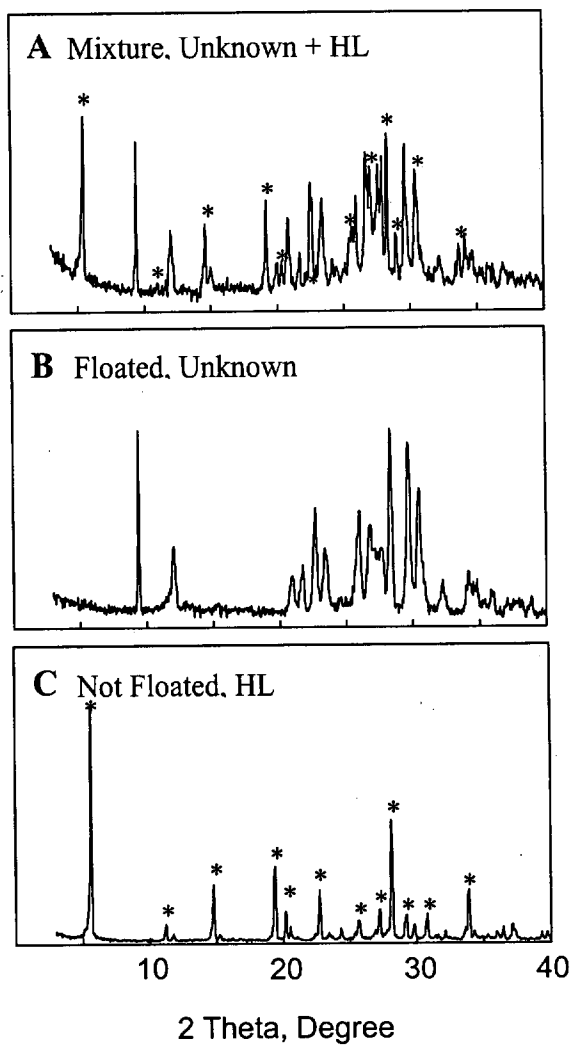
X-ray powder diffraction patterns of the mixture of HMOR and H(90)Y (A), the particles that floated (B), and the particles that did not float (C), respectively.

Supporting Information (Figure 4)



X-ray powder diffraction patterns of the mixture of NaY and silica (A), the particles that floated (B), and the particles that did not float (C), respectively.

Supporting Information (Figure 5)



X-ray powder diffraction patterns of the mixture of HL and an unknown zeolite (A), the particles that floated (B), and the particles that did not float (C), respectively.