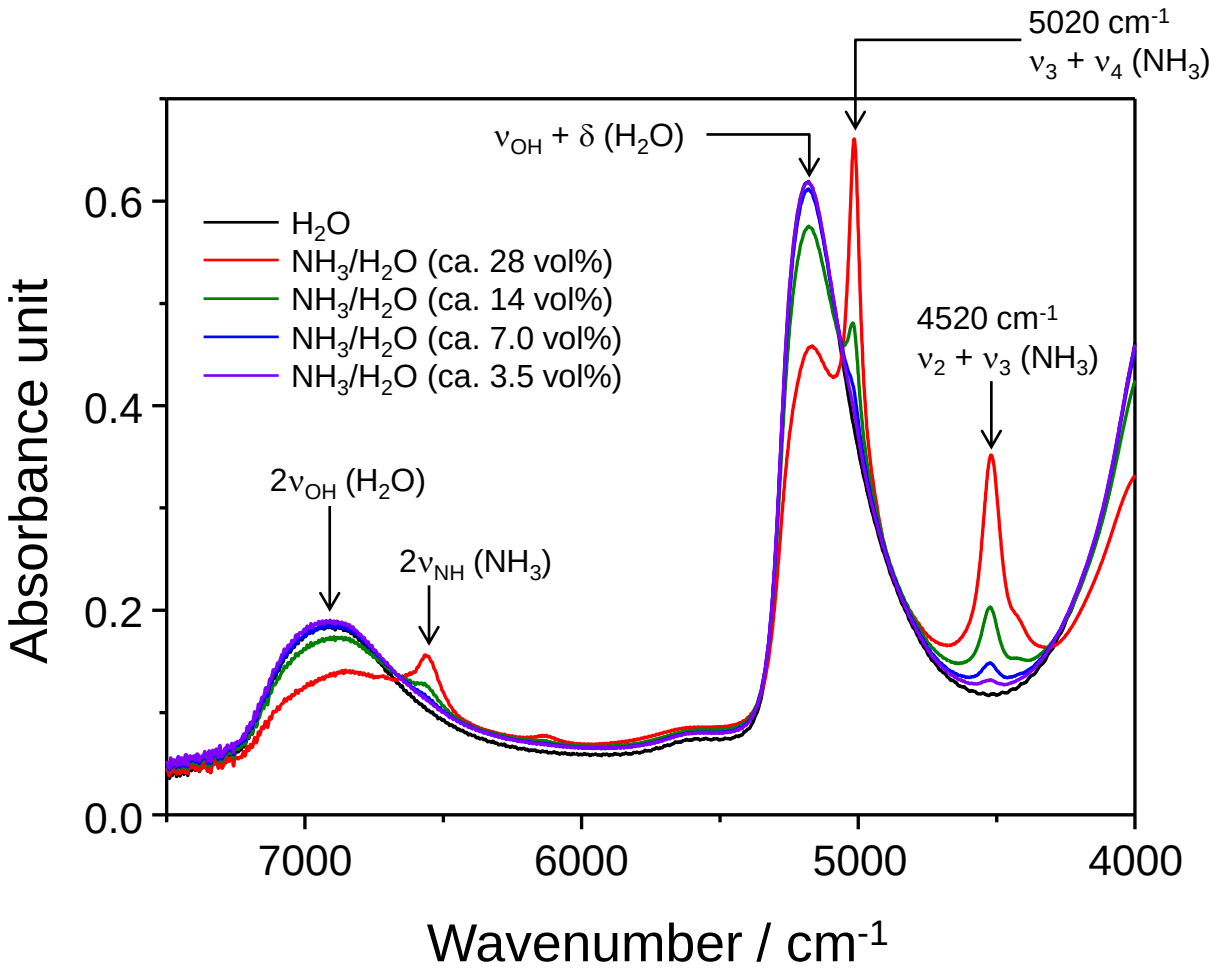

Fig. S1 NIR absorption spectra of NH_3 aqueous solution.

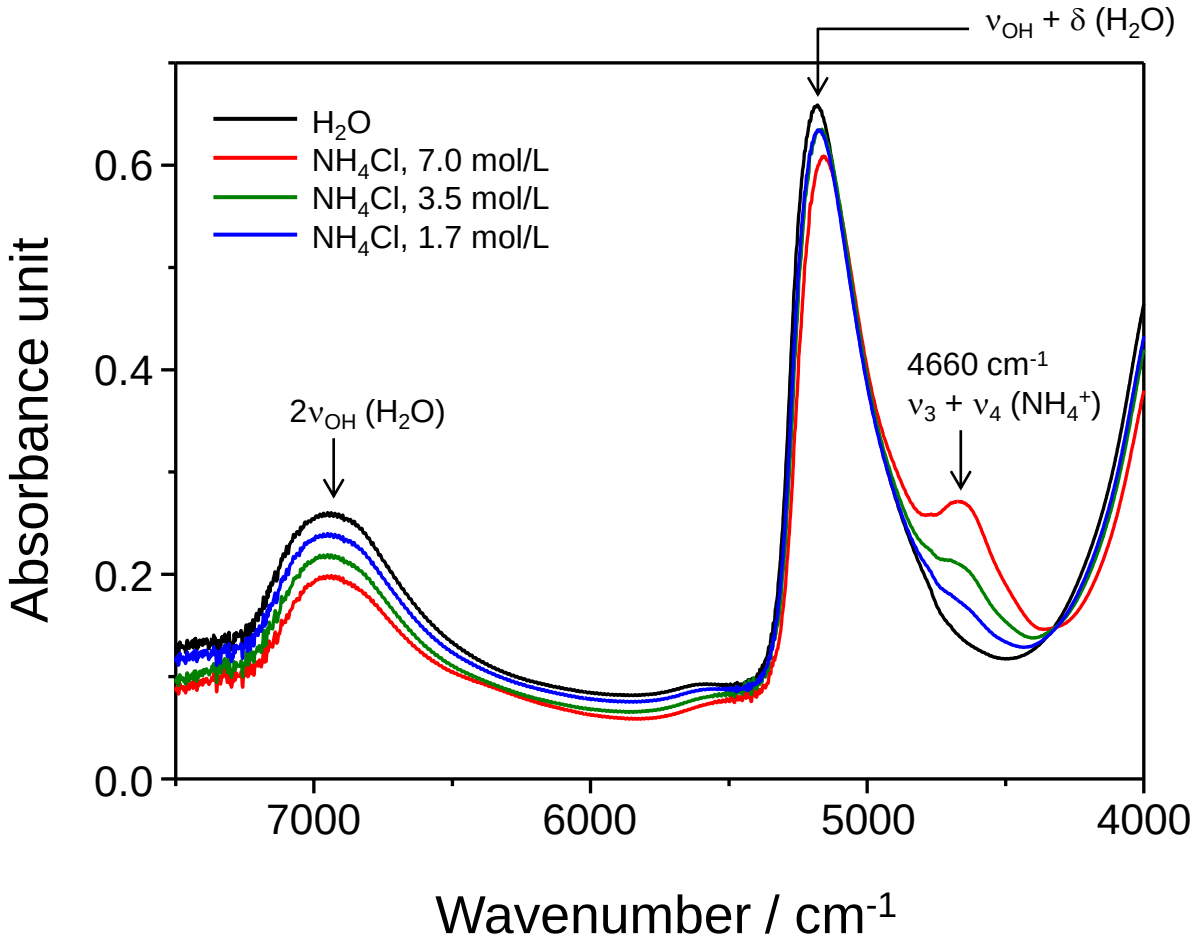

Fig. S2 NIR absorption spectra of NH_4Cl aqueous solution.

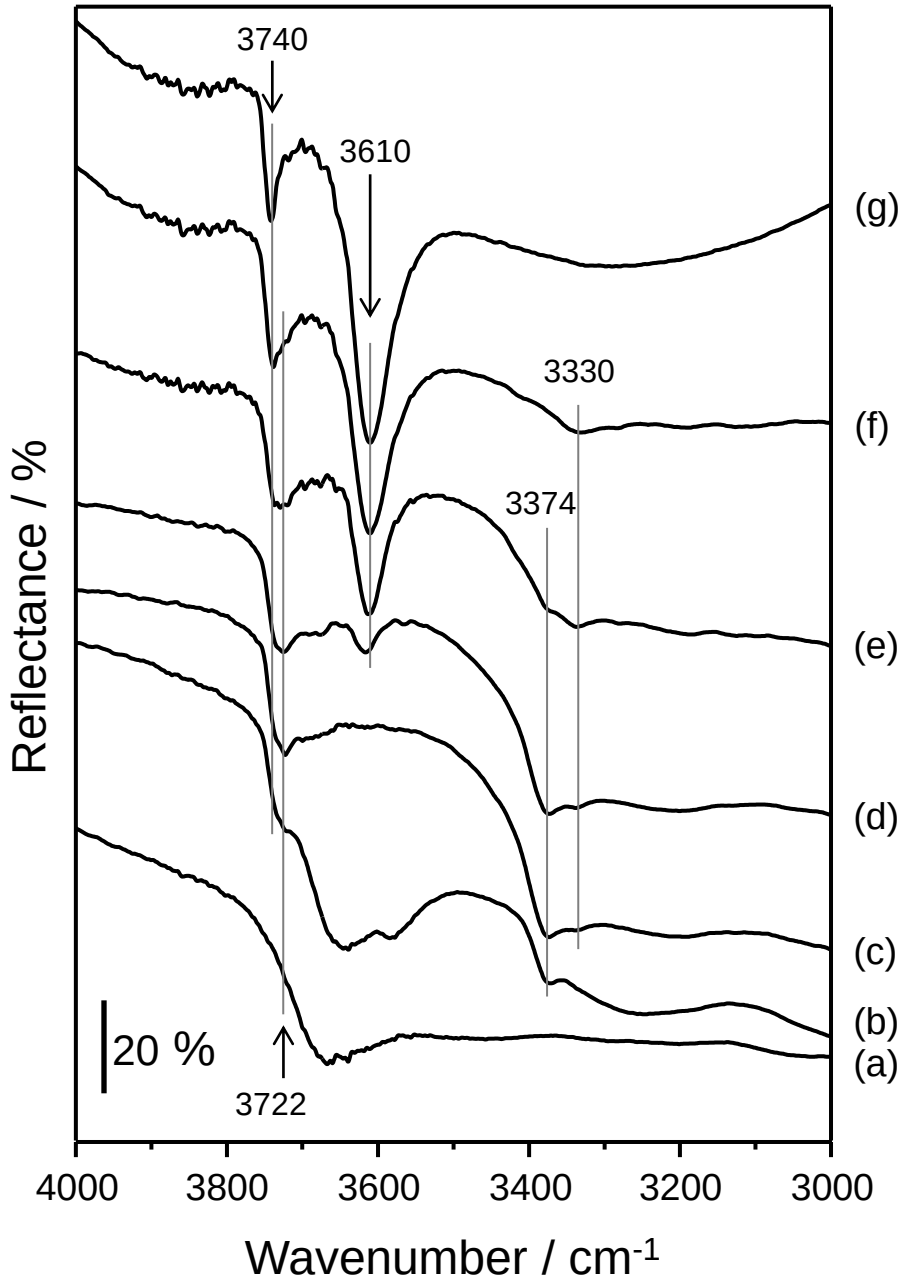

Figure S3 MIR absorption spectra of NH_4/ZSM-5(39) obtained simultaneously with the NIR spectra shown in Fig. 1; measurement conditions correspond to Fig. 1.

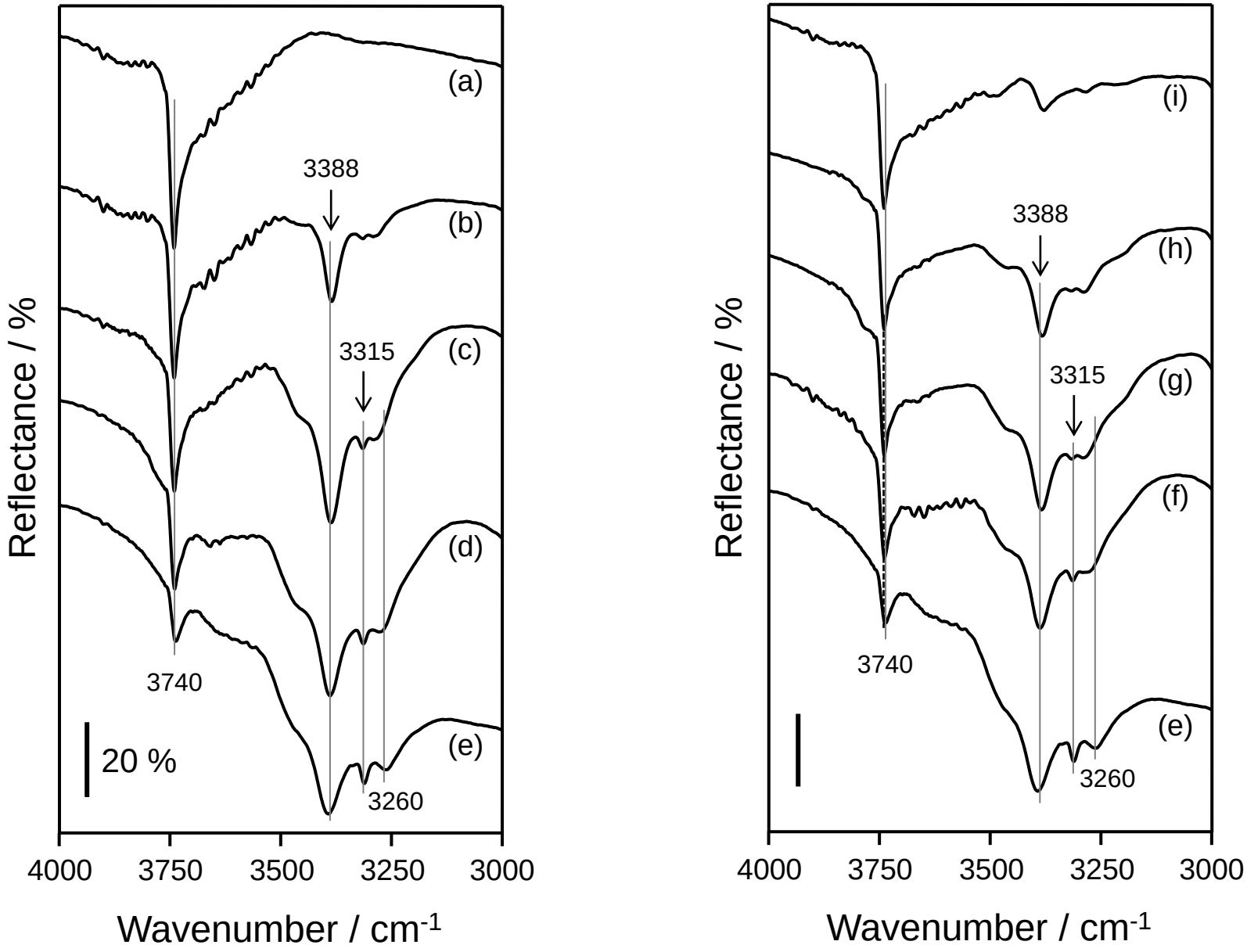

Figure S4 MIR absorption spectra of Na/ZSM-5(23.8) obtained simultaneously with the NIR spectra shown in Fig. 2; measurement conditions correspond to Fig. 2.

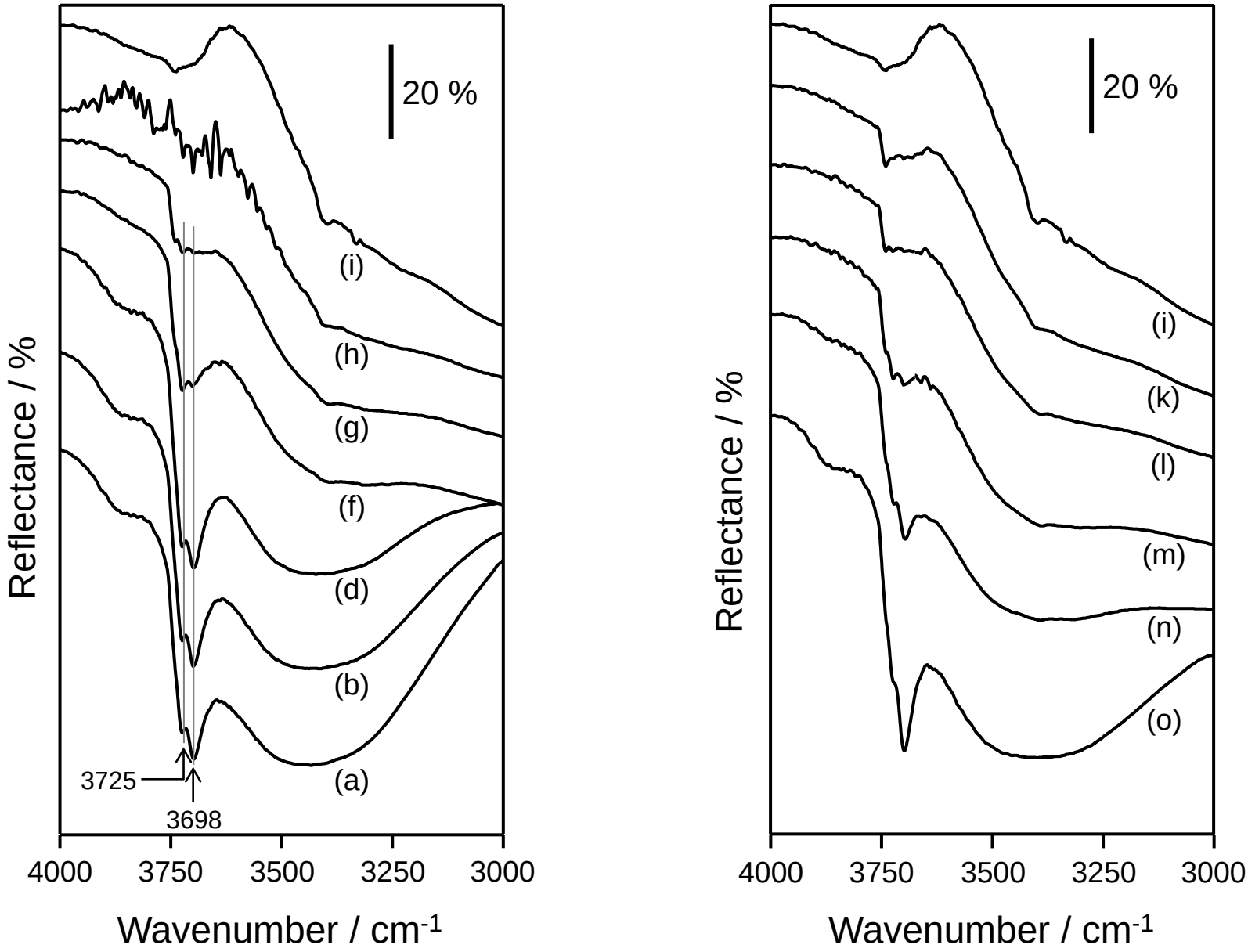

Figure S5 MIR absorption spectra of H/ZSM-5(1500) obtained simultaneously with the NIR spectra shown in Fig. 4; measurement conditions correspond to Fig. 4 (spectra (c), (e), and (j) were omitted for simplification).

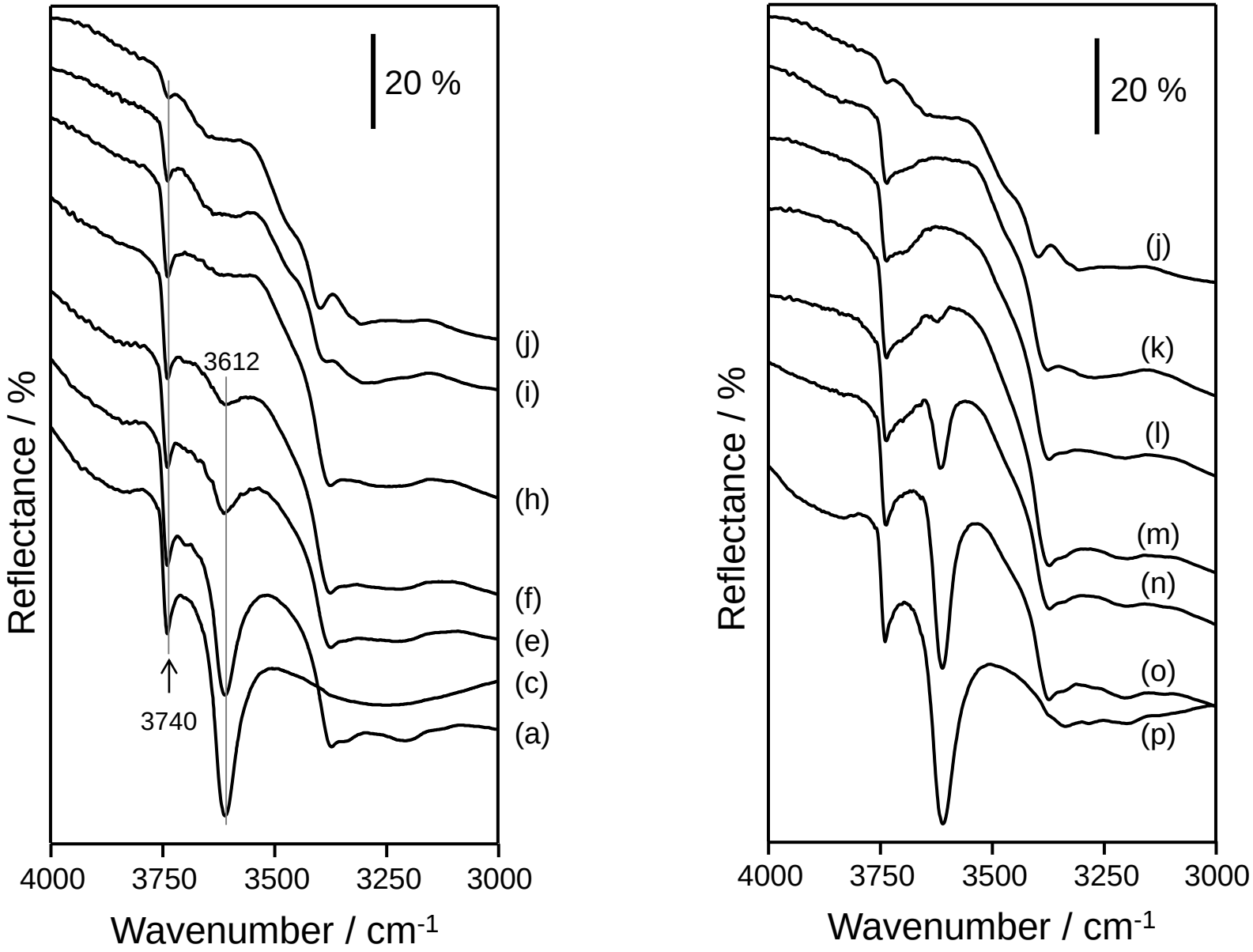

Figure S6 MIR absorption spectra of H/ZSM-5(39) obtained at simultaneously with the NIR spectra shown in Fig. 6; measurement conditions correspond to Fig. 6 (spectra (b), (d), and (g) were omitted for simplification).