catalysts

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Communication

Propene Adsorption-Chemisorption Behaviors on H-SAPO-34 Zeolite Catalysts at Different Temperatures

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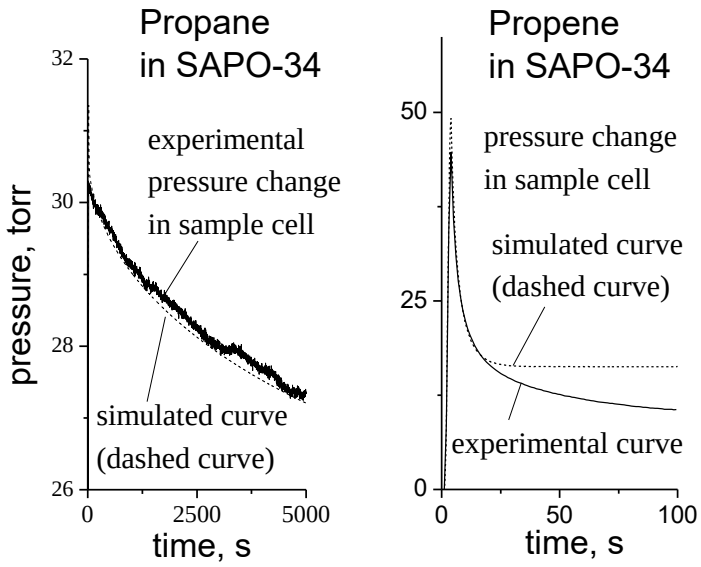

Figure S1. Experimental and simulated uptake curves for propane and propene in SAPO-34. (Source, F. Wang, Y. Kobayashi, U. Muhammad, D. Wang, Y. Wang, Review of Scientific Instruments 2016, 87, 036101).

Calculation of the adsorb gases

The amount of gas adsorbed on sample is calculated by subtracting the amount of gas occupying by the dead volume from that of gas dosed.

$$\Delta n_{ads} = \Delta n_{int} - \Delta n_c$$

$$= \frac{\Delta P_S \times V_S}{R \times T_S} - \frac{\Delta P_C \times V_C}{R \times T_C}$$

where Δnads is the amount of gas adsorbed on sample, Δnint is the amount of gas dosed from the supply chamber, Δnc is the amount of gas occupying the dead volume in the cell assembly, ΔPS is a pressure change in the supply chamber after the gas introduction, VS is the volume of the supply chamber, TS is temperature in the supply chamber, R is the gas constant, PC is the pressure in the assembly after the gas introduction and when equilibrium reached (i.e., no further adsorption), VC is the dead volume of the assembly with sample, TC is temperature in the assembly.

Calculation of the dead volume

$$V_C = \frac{\Delta P_S \times T_C}{P_C \times T_S} V_S$$

where ΔPS is a pressure change in the supply chamber after the gas introduction, VS is the volume of the supply chamber (648.48 m^3), TS is temperature in the supply chamber, R is the gas constant, PC is the pressure in the assembly after the gas introduction, VC is the dead volume of the assembly with sample, TC is temperature in the assembly (room temperature).