Supplementary Material

Table S1. The comparison of the physicochemical properties and lattice parameters of ZnAl_X_LDHs.

Sample	CO_2 Ncm^3/g	d_{LDH} [nm]	LDH interlamellar distance [Å]	a [Å]	c [Å]
ZnAl_0.3_K	9.1	21.2	7.534	3.059	22.608
ZnAl_0.5_K	18.6	22.1	7.547	3.058	22.549
ZnAl_1.0_K	26.5	27.2	7.550	3.059	22.540

Table S2. Contribution of basic sites for ZnAl_X_K catalysts. Peak area ratio is defined as the ratio of the sum of α, β and δ peak area of ZnAl_X_K catalysts to ZnAl_0.5_K catalyst.

Sample	α peak area ratio	β peak area ratio	δ peak area ratio	Peak area ratio	Desorption T_{max} [°C]
ZnAl_0.3_K	0.14	0.62	0.09	0.85	224
ZnAl_0.5_K	0.12	0.71	0.18	1.00	236
ZnAl_1.0_K	0.12	0.65	0.15	0.92	223

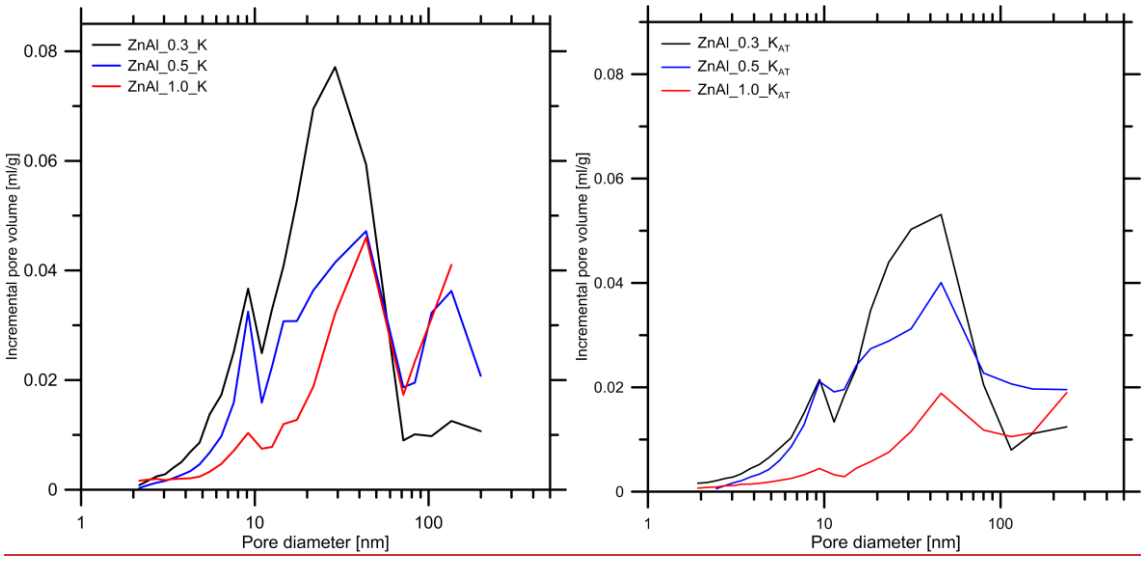

Figure S1. Pore size distribution of ZnAl_X_K and ZnAl_X_K_{AT} samples with different Zn/Al molar ratio.