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Supporting Information

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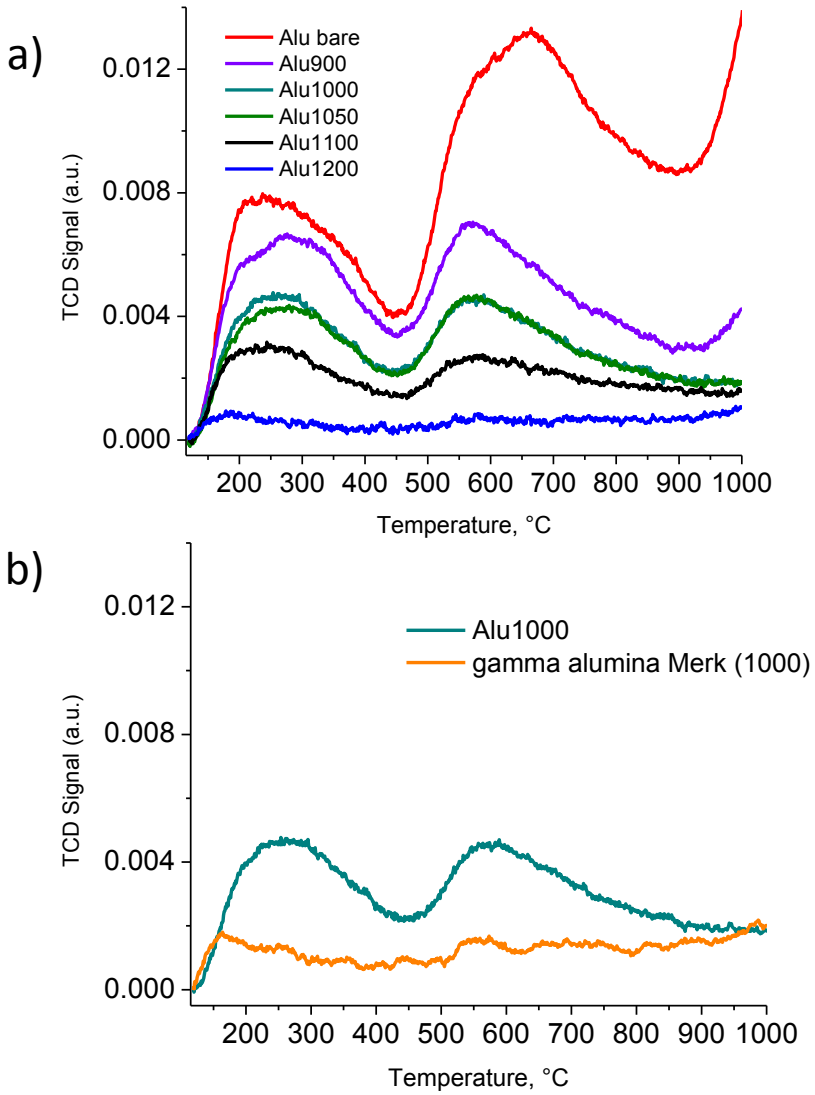

Figure S-1. NH_3 temperature programmed desorption (TPD) profiles: a) Alu series and **b)** comparison with a commercial γ-Alumina (Merck 1.01095.1000) calcined at 1000 ^{o}C.

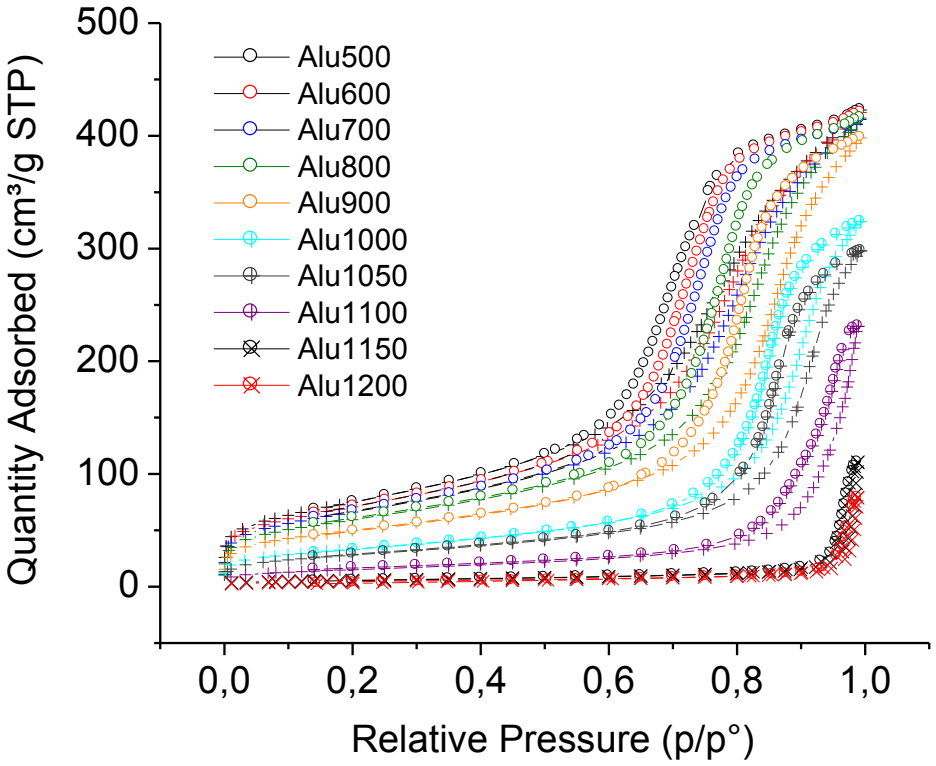

Figure S-2. Nitrogen sorption isotherms at -196 °C K for the fresh Alu series.

Table S-1. Example of the accuracy of the conversion and selectivity quantities.

	Alu500	
Data points	**Conversion (%)**	**Selectivity (%)**
1	35.71	81.36
2	36.18	82.71
3	35.62	84.13
4	36.08	82.64
5	34.99	82.94
6	34.98	82.26
7	34.54	82.79
Average	**35.44**	**82.69**
σ (%)	**1.6**	**0.9**

Table S-2. Structural, textural and acidic properties of the fresh thermally treated aluminas.[a]

Sample	**Phase**	V_T **(cm^3/g)**	V_T**' (cm^3/ml bed)**[b]	S_{BET} **(m^2/g cat.)**	S'_{BET} **[b] (m^2/ml bed)**	$D_{BJH\ ads}$ **(Å)**	**Density**[c] **(g/cm^3)**	**Acidity (μmol/g)**	**Acidity**[b] **(μmol/ml bed)**
Bare [e]	γ	0.639 (0.628)	0.389 (0.382)	272 (227)	165 (138)	84	3.035	637	388
Alu500 [e]	γ	0.649 (0.661)	0.431 (0.439)	271 (228)	180 (152)	86	3.108	–	–
Alu600	γ	0.644	0.446	255	177	93	3.084	–	–
Alu700	γ	0.635	0.402	239	151	101	3.003	–	–
Alu800	γ	0.636	0.436	214	147	118	3.099	–	–
Alu900 [e]	δ	0.608 (0.593)	0.473 (0.461)	179 (138)	139 (108)	138	3.295	540	420
Alu1000	θ	0.492	0.435	119	105	141	3.316	436	385
Alu1050 [e]	θ	0.458 (0.382)	0.327 (0.273)	101 (60)	72 (43)	230	3.376	398	284
Alu1100	θ,α	0.354	0.356	54	54	294	3.658	244	245
Alu1150	θ,α	0.165	0.157	20	19	330 [d]	4.009	–	–
Alu1200	α	0.117	0.143	16	20	293 [d]	4.067	20	25
C1050 [f]	θ,α	0.051	–	11	–	185 [d]	–	–	–

a) N_2 (-196 °C) isotherms are given in Fig.S-2 and NH_3-TPD in Fig. S-1.
b) Quantity per reactor volume.
c) Skeletal density.
d) Geometrical pore size as there is no maximum in the BJH pore size distribution.
e) Values between brackets are derived from Argon physisorption at -186 °C.
f) Ultrapure alumina (commercial: Merck 1.01095.1000) thermally treated at 1050 °C.