Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Modified Reverse ADOR assembles Al-rich **UTL** zeolite from IPC-1P layers

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Supplementary information

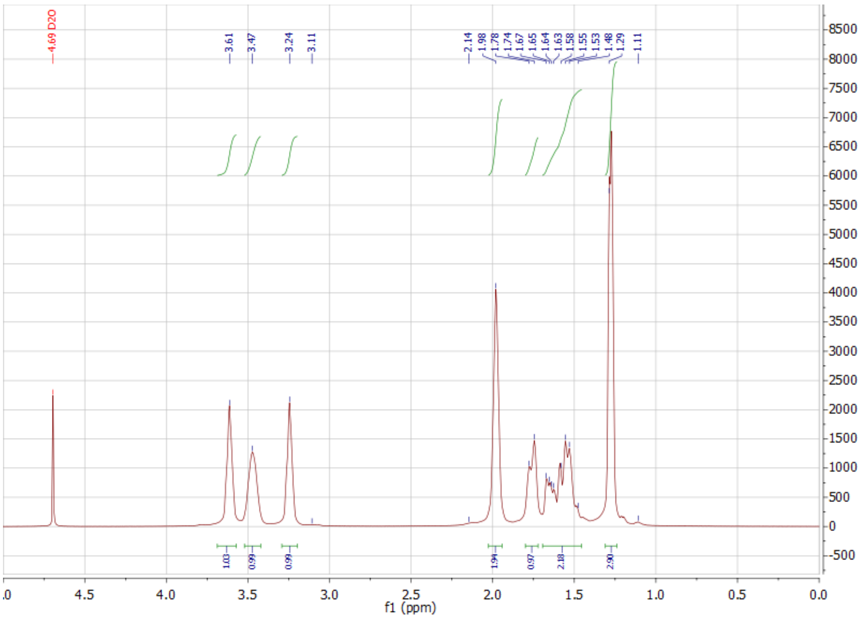

Fig. S1: [1]H NMR spectrum of the dimethyl-5-anizospiro[4.5]decane (DMASD) bromide in D_2O

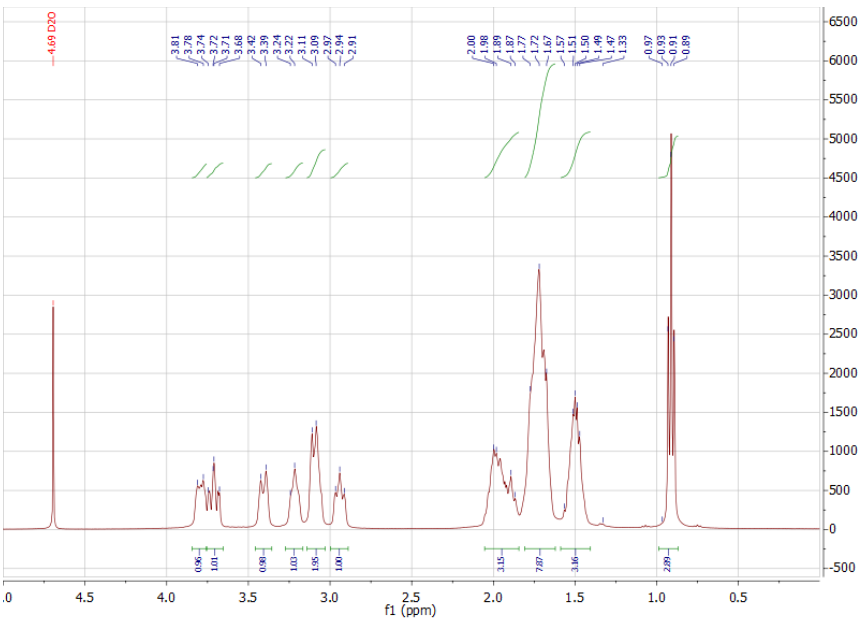

Fig. S2: [1]H NMR spectrum of the 7-ethyl-6-azoniaspiro[5.5]undecane (EASuD) bromide in D_2O

Table S1: Composition of synthesis mixtures for samples of reconstructed **UTL** samples

Sample	$c_{HCl/EtOH}$ (mol/l)	$Me_2(EtO)_2Si$ (mg)	$(MeO)_4Ge$ (mg)	NH_4F (mg)	$Al(NO_3)_3.9H_2O$ (mg)
3Si:1Al	1.25	49.4	0	2.1	41.6
1Si:1Al	1.25	32.9	0	2.1	83.3
1Si:3Al	1.25	16.5	0	2.1	124.9
Pure Al ≡ pHCl = -0.1 (F)	1.25	0	0	2.1	166.5
pHCl = 1 (Ge)	10^{-1}	24.7	32.8	0	37.7
pHCl = 3 (Ge)	10^{-3}	24.7	32.8	0	37.7
pHCl = 5 (Ge)	10^{-5}	24.7	32.8	0	37.7
pHCl = 1 (F)	10^{-1}	50.9	0	2.1	37.7
pHCl = 3 (F)	10^{-3}	50.9	0	2.1	37.7
pHCl = 5 (F)	10^{-5}	50.9	0	2.1	37.7
Re-UTL (Al)	10^{-3}	50.9	0	2.1	37.7
Re-UTL (Al+Ge)	10^{-3}	24.7	32.8	0	37.7

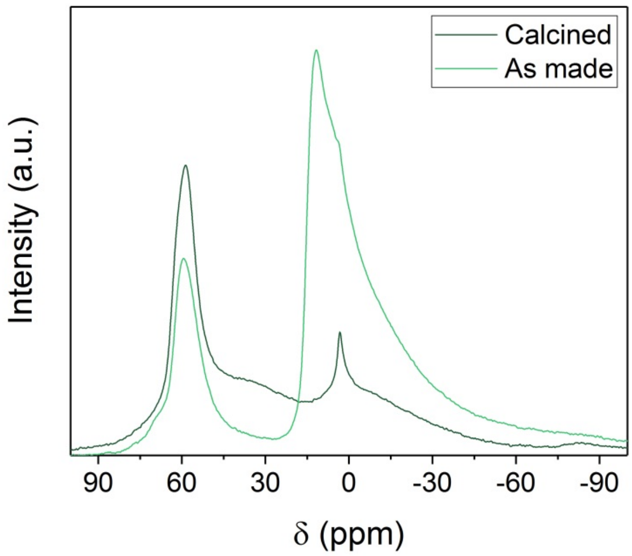

Fig. S3: ^{27}Al MAS MNR spectra of "pure Al" reconstructed **UTL** before and after calcination

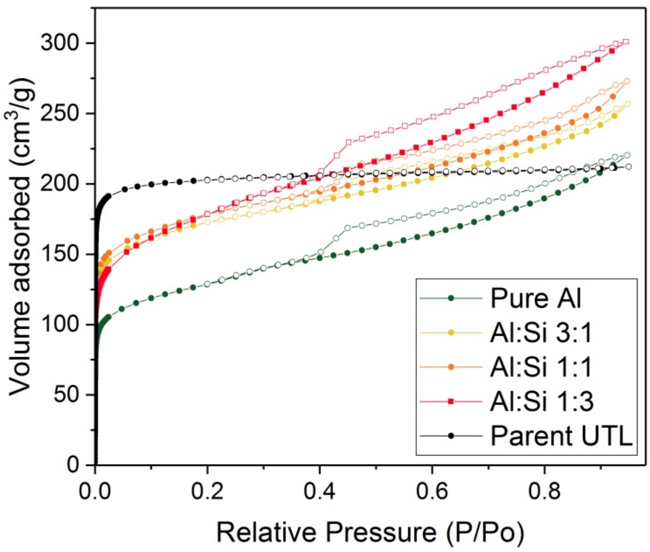

Fig. S4: Argon adsorption-desorption isotherms of **UTL** zeolites reconstructed with varying aluminium content

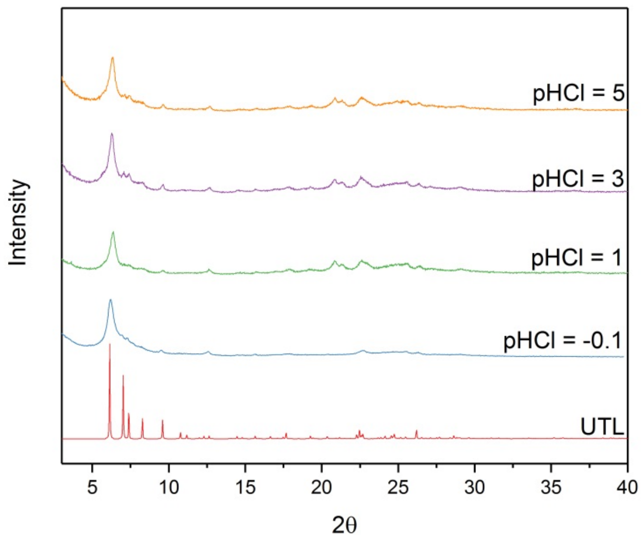

Fig. S5: Powder XRD patterns of **UTL** zeolites reconstructed by fluoride-assisted Reverse ADOR under varying acidity

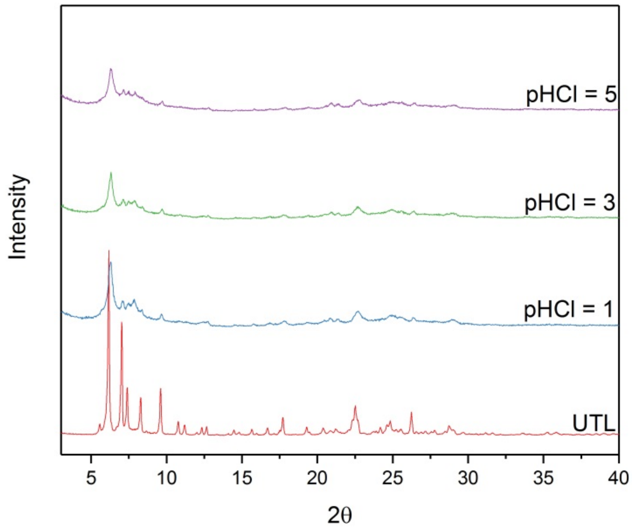

Fig. S6: Powder XRD patterns of **UTL** zeolites reconstructed by germanium-assisted Reverse ADOR under varying acidity

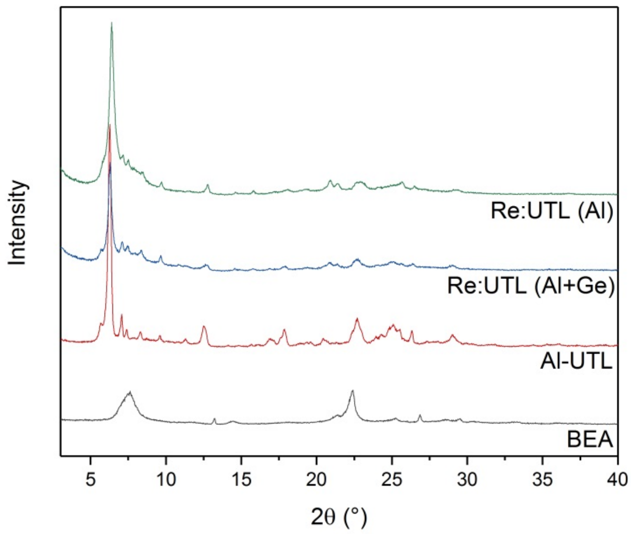

Fig. S7: Powder XRD patterns of **BEA**, Al-UTL and reconstructed **UTL** zeolites

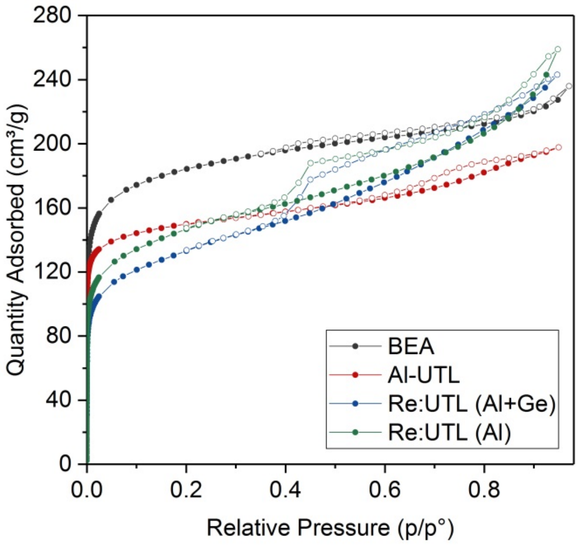

Fig. S8: Argon adsorption-desorption isotherms of **BEA**, Al-UTL and reconstructed **UTL** zeolites

Table S2: Textural and acidic properties of **BEA**, Al-UTL and reconstructed **UTL** zeolites

	BET (m^2/g)	S_{ext} (m^2/g)	V_{tot} (cm^3/g)	V_{mic} (cm^3/g)	$c_{Brønsted}$ (µmol/g)	c_{Lewis} (µmol/g)
BEA	560	170	0.30	0.16	300	100
Al-UTL	454	64	0.25	0.15	46	74
Re-UTL (Al+Ge)	409	180	0.31	0.08	25	75
Re-UTL (Al)	450	138	0.33	0.09	21	54