Supporting Information

Remarkable proton conducting behavior driven by the synergistic effects in an acid base conjugated MOFs impregnated with sulphuric acid molecules

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Table S1. Elemental analysis for UiO-66-SO_3^--NH_3^+

Sample	N(%)	C(%)	H(%)	S(%)
UiO-66-SO_3^--NH_3^+	2.62	27.73	2.55	3.26

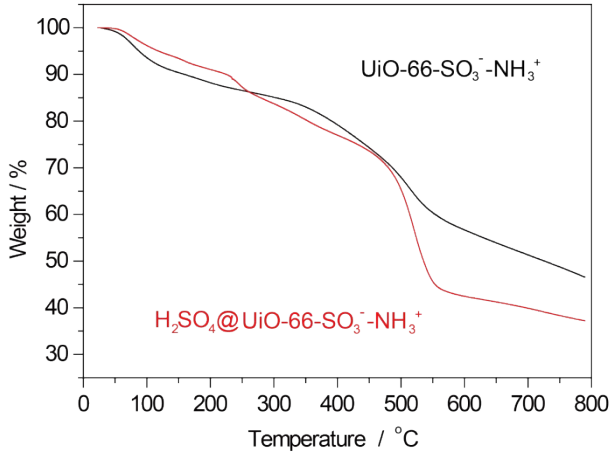

Fig. S1. TG plots of UiO-66-SO_3^--NH_3^+ and H_2SO_4@UiO-66-SO_3^--NH_3^+.

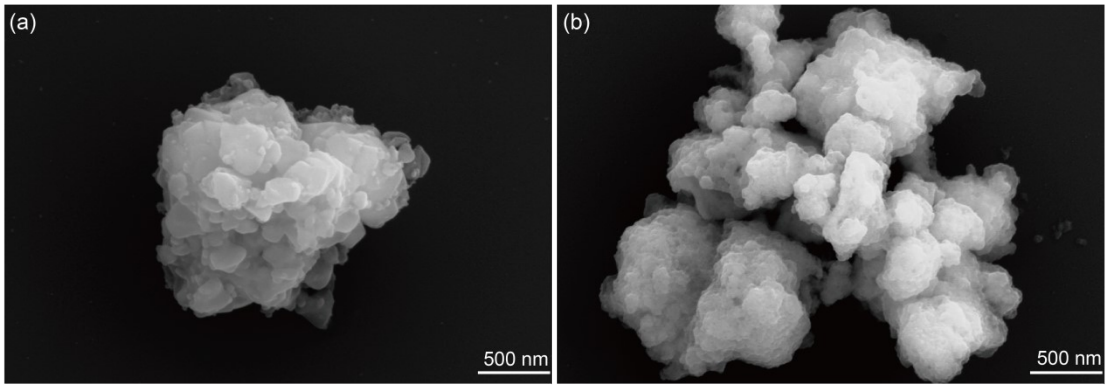

Fig. S2. SEM of composites: (a) for UiO-66-SO_3^--NH_3^+ and (b) for H_2SO_4@UiO-66-SO_3^--NH_3^+.

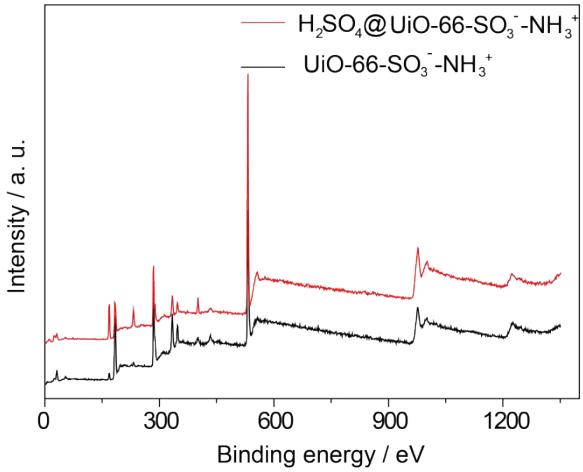

Fig. S3. XPS of UiO-66-SO_3^--NH_3^+ and H_2SO_4@UiO-66-SO_3^--NH_3^+.

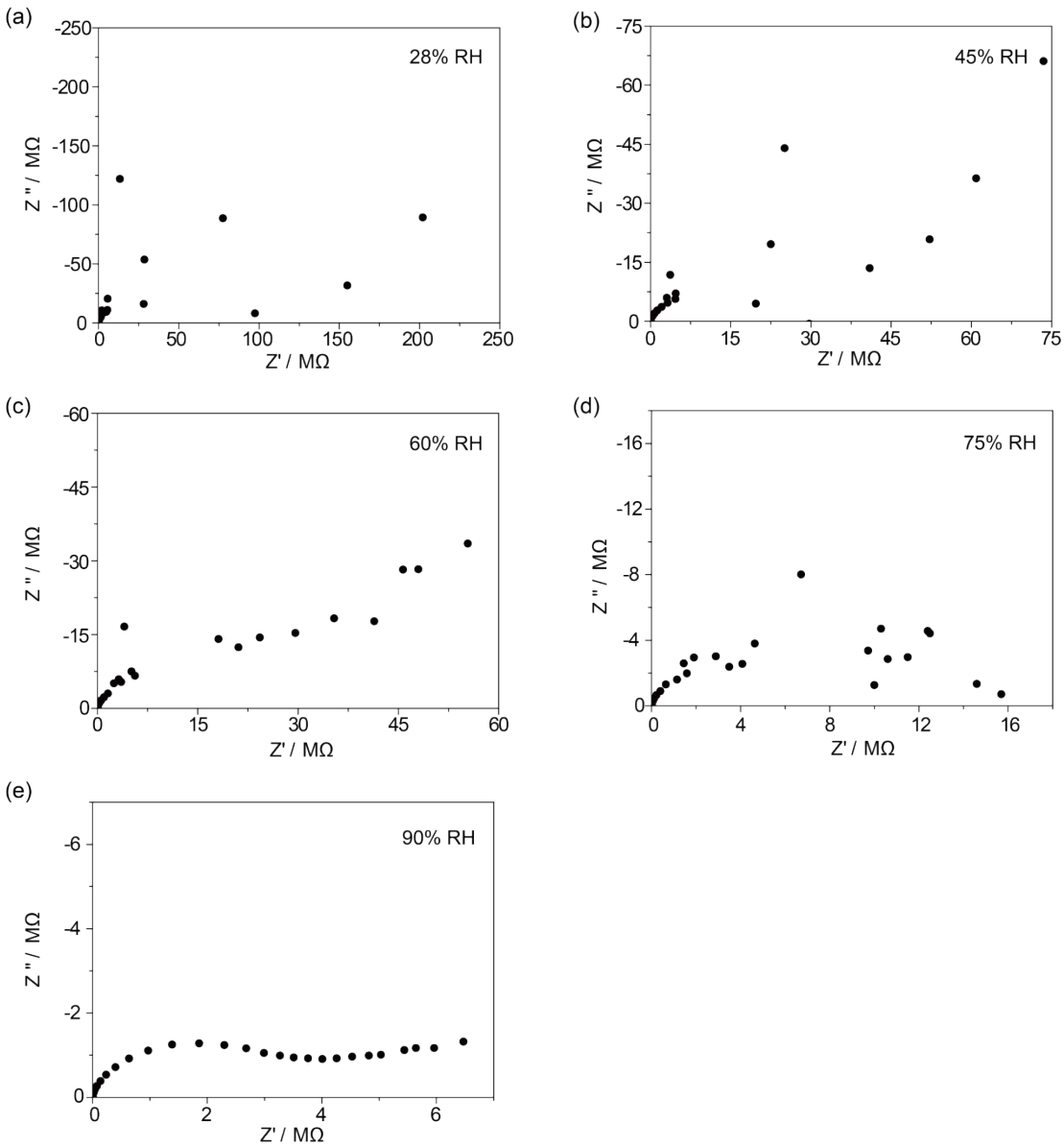

Fig. S4. Nyquist plots of UiO-66-SO_3^--NH_3^+ at 30 °C and different relative humidity.

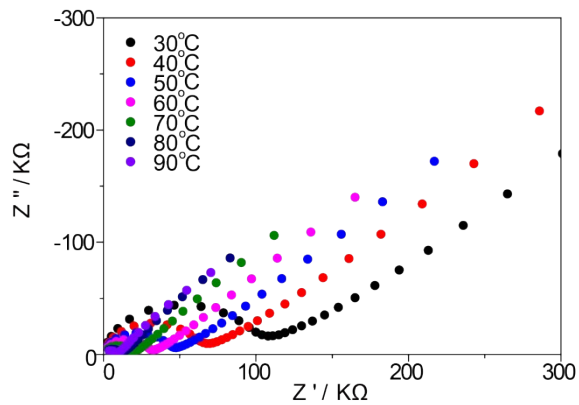

Fig. S5. Nyquist plots of UiO-66-SO_3^--NH_3^+ versus different temperature at 100% RH.

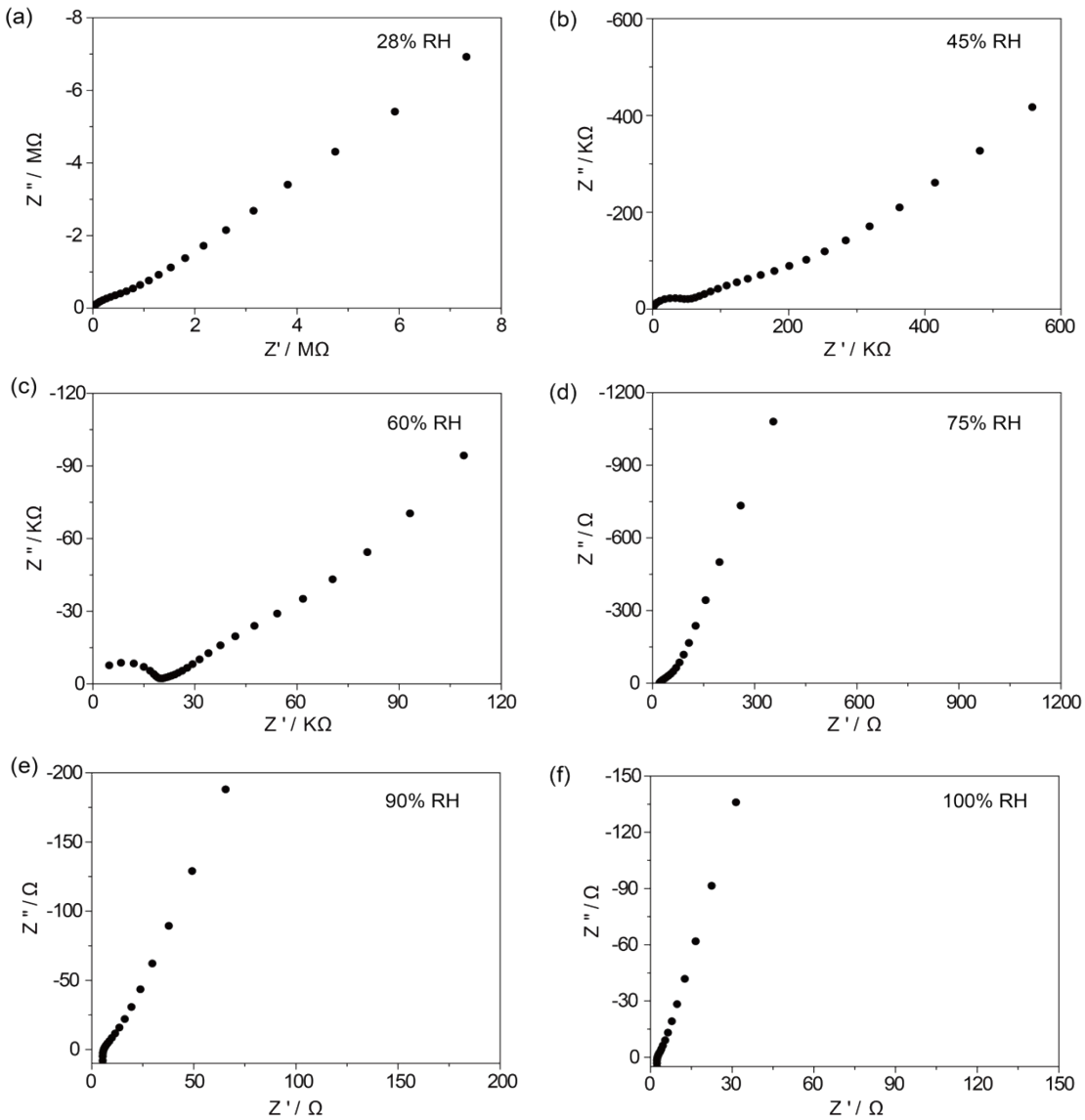

Fig. S6. Nyquist plots of H_2SO_4@UiO-66-SO_3^--NH_3^+ versus different relative humidity at 30 °C.

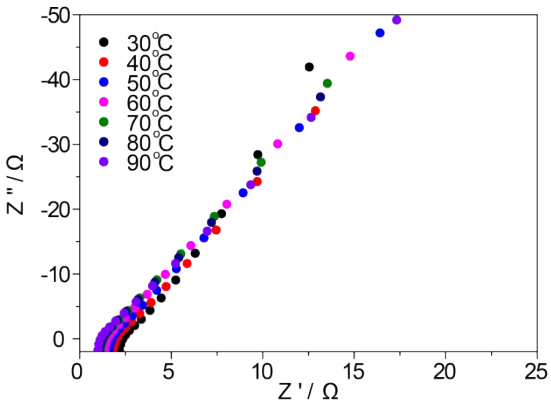

Fig. S7. Nyquist plots of H_2SO_4@UiO-66-SO_3^--NH_3^+ versus different temperature at 100% RH.

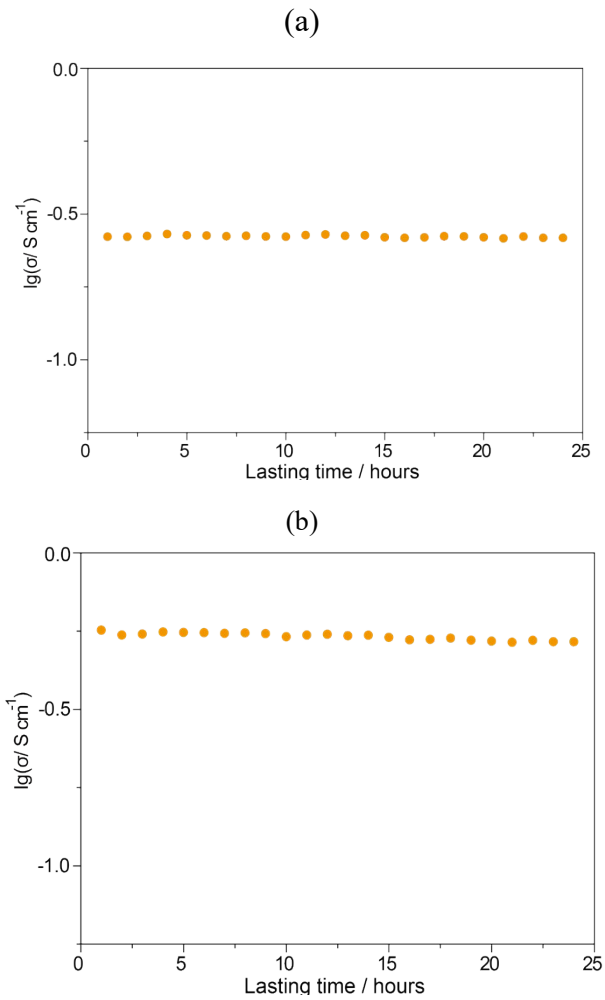

Fig. S8. Long-term proton conducting durability measurement of H_2SO_4@UiO-66-SO_3^--NH_3^+ at 100% RH and 30 °C(a) as well as 90 °C (b).

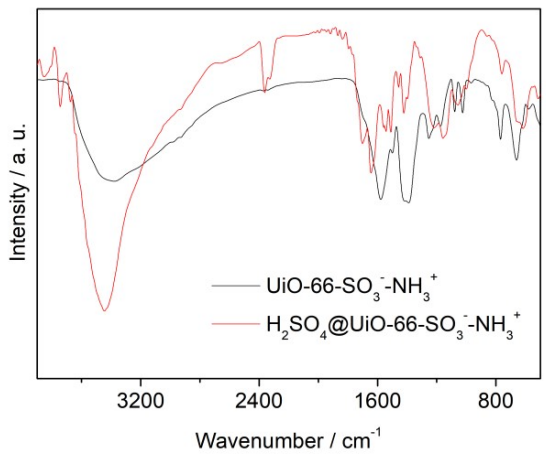

Fig. S9. Complete IR spectra of H_2SO_4@UiO-66-SO_3^--NH_3^+ and UiO-66-SO_3^--NH_3^+.

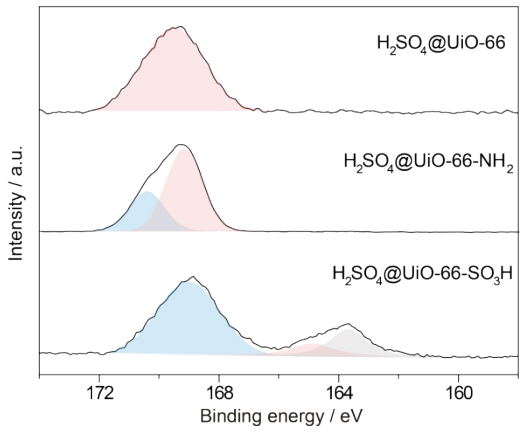

Fig. S10. S binding energy of H_2SO_4@UiO-66, H_2SO_4@UiO-66-NH_2 and H_2SO_4@UiO-66-SO_3H.

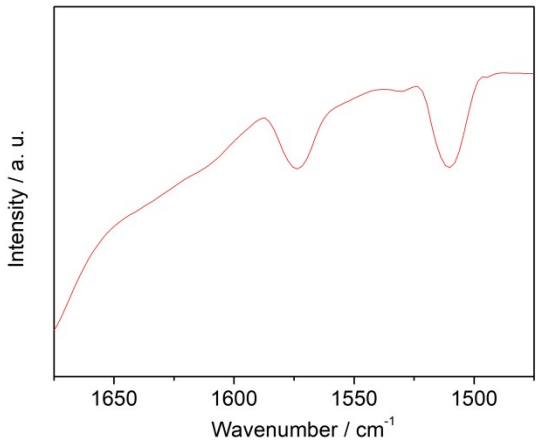

Fig. S11. IR spectrum of H_2SO_4@UiO-66.

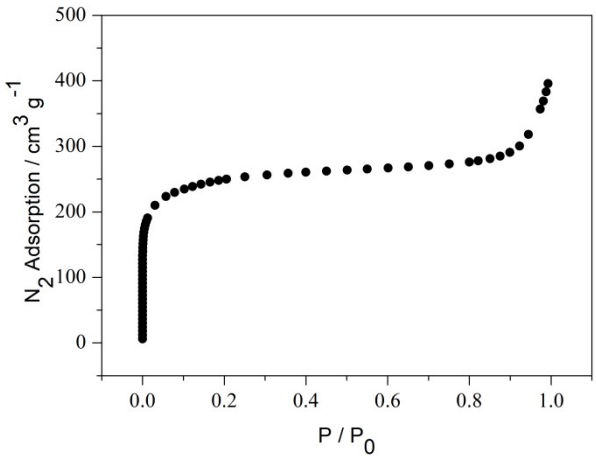

Fig. S12. Nitrogen adsorption of washed H_2SO_4@UiO-66-SO_3^--NH_3^+.

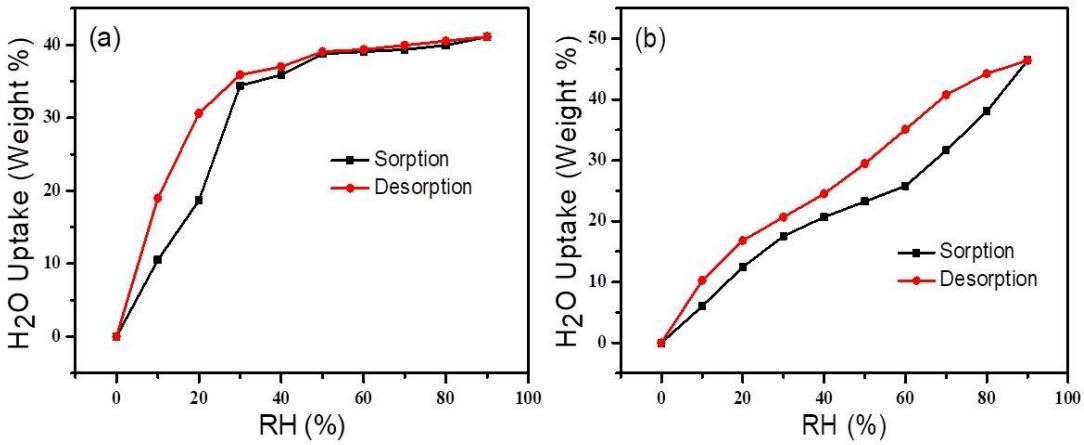

Fig. S13 Water adsorption–desorption isotherms of UiO-66-SO_3^--NH_3^+ (a) and H_2SO_4@UiO-66-SO_3^--NH_3^+ (b) measured at 25 ^{0}C.