Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Water–assisted proton conductivity of two lanthanide supramolecules

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Supporting information

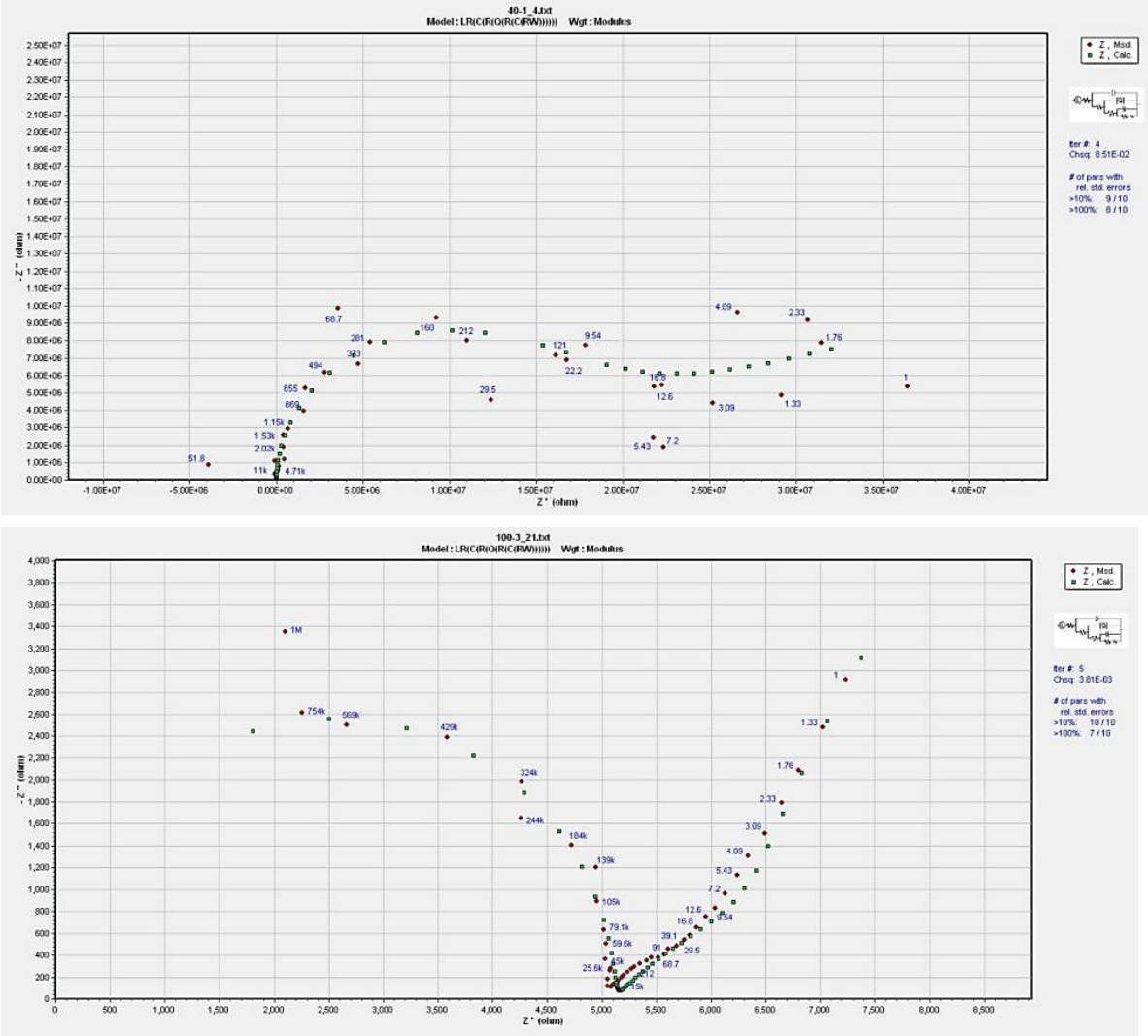

Fig. S1 Nyquiest curves (red) and analog equivalent circuit curves (green) of complex 1 at 40 or 100 ° C at 98% RH.

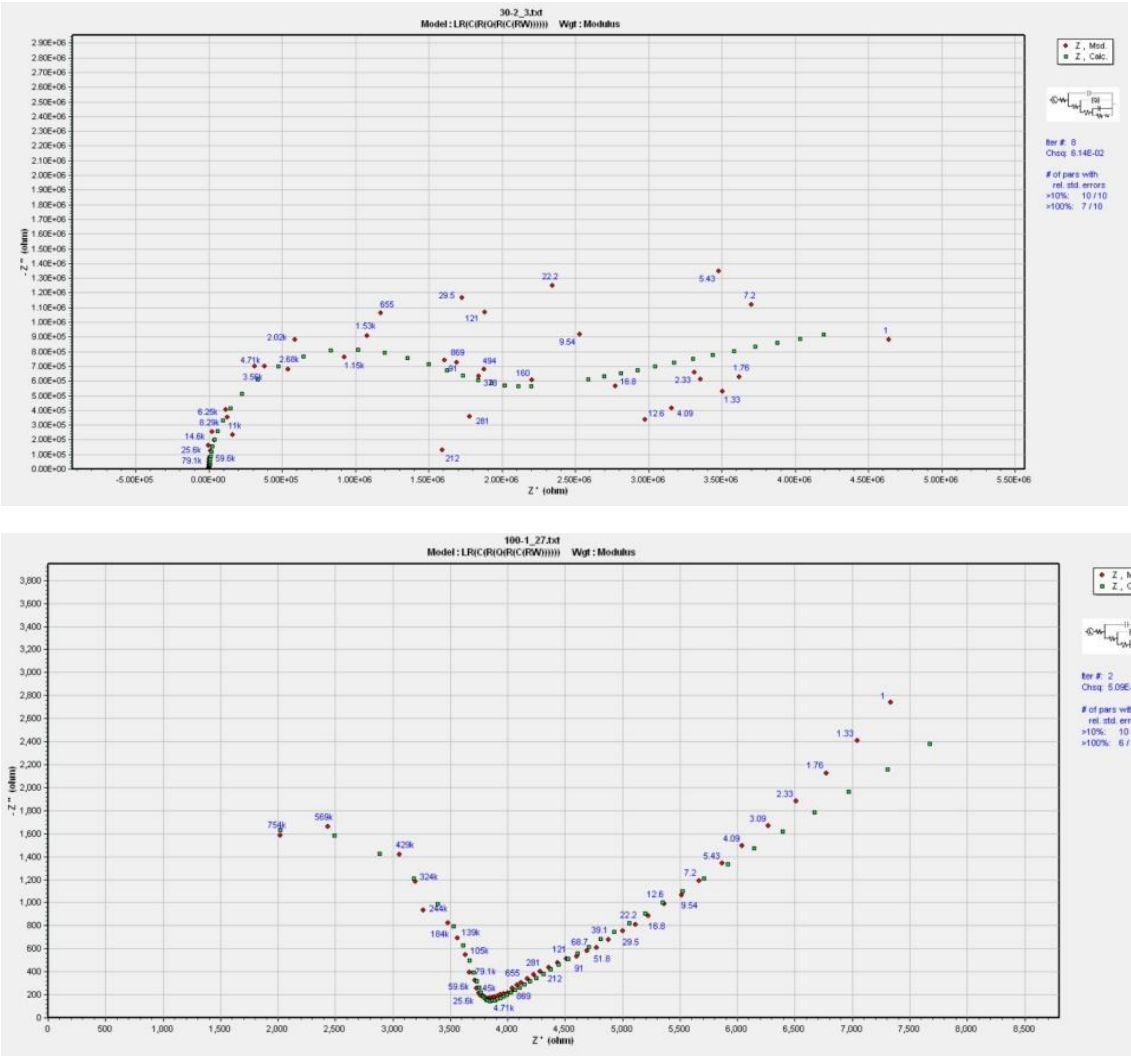

Fig. S2 Nyquiest curves (red) and analog equivalent circuit curves (green) of complex 2 at 30 or 100 ° C at 98% RH.

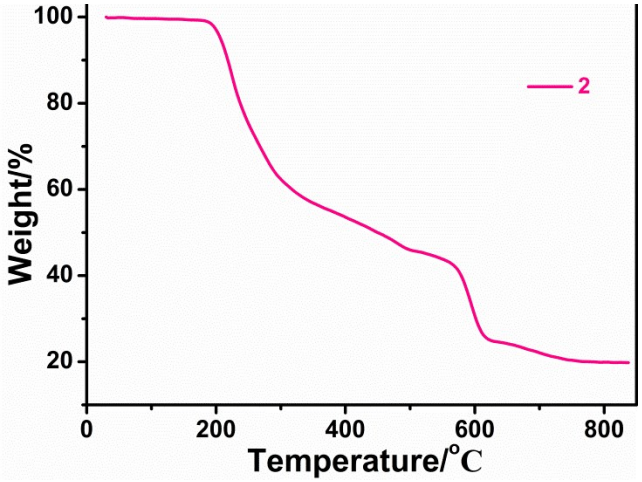

Fig. S3 TG curve of complex **2**.

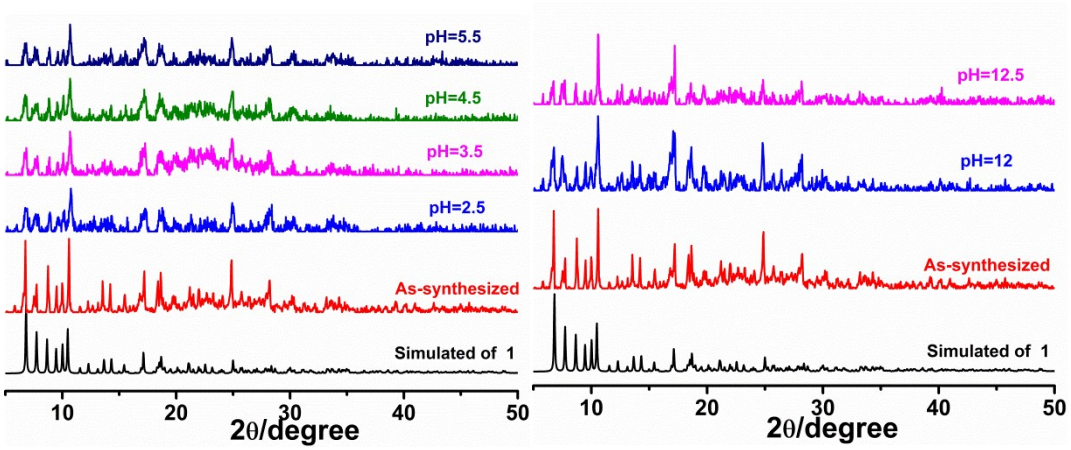

Fig. S4 PXRD patterns of **1**: before and after soaking in acidic solution (left); (b) before and after soaking in basic solution (right).

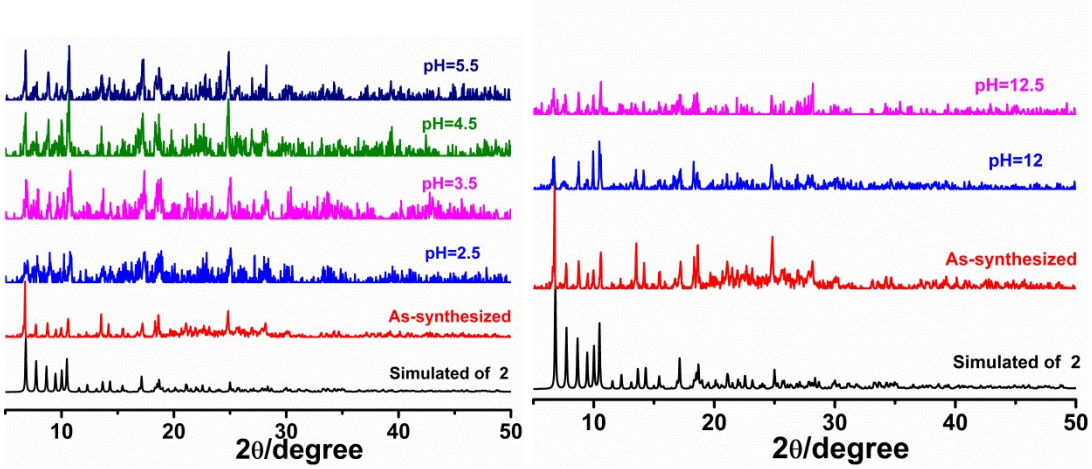

Fig. S5 PXRD patterns of **2**: before and after soaking in acidic solution (left); (b) before and after soaking in basic solution (right).

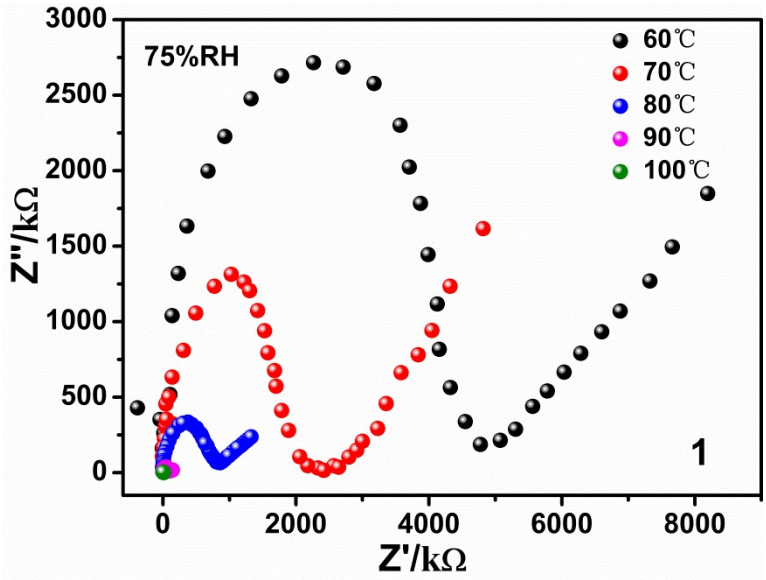

Fig. S6 Nyquist plots of **1** at 75% RH at different temperatures.

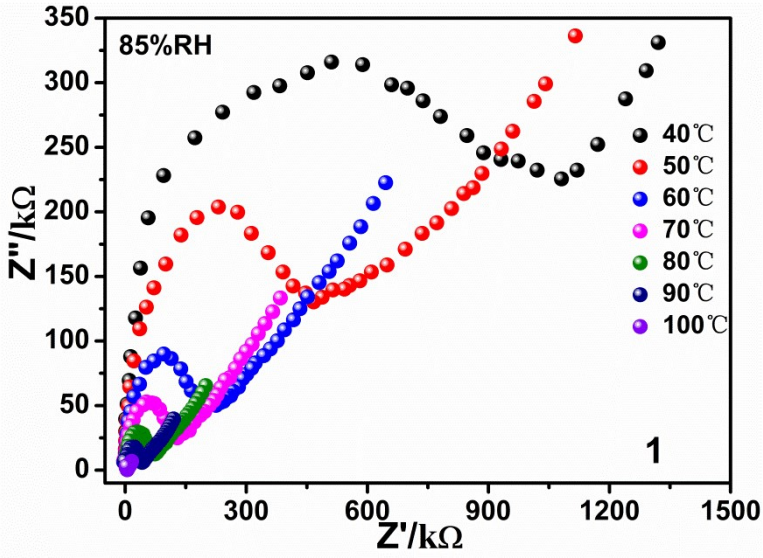

Fig. S7 Nyquist plots of **1** at 85% RH at different temperatures.

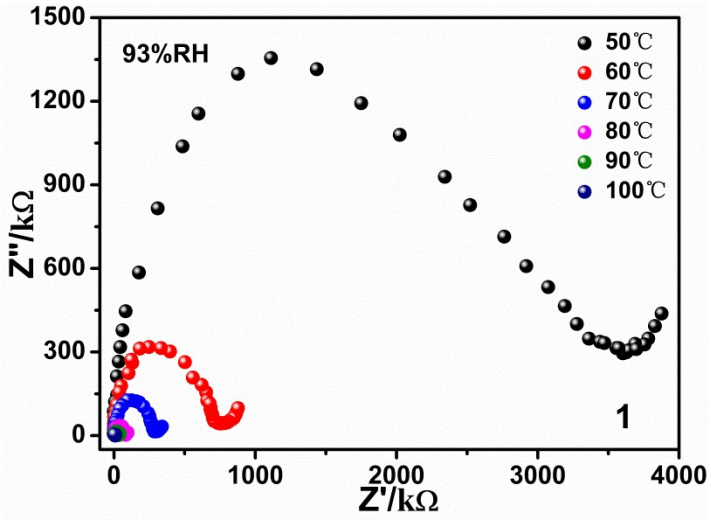

Fig. S8 Nyquist plots of **1** at 93% RH at different temperatures.

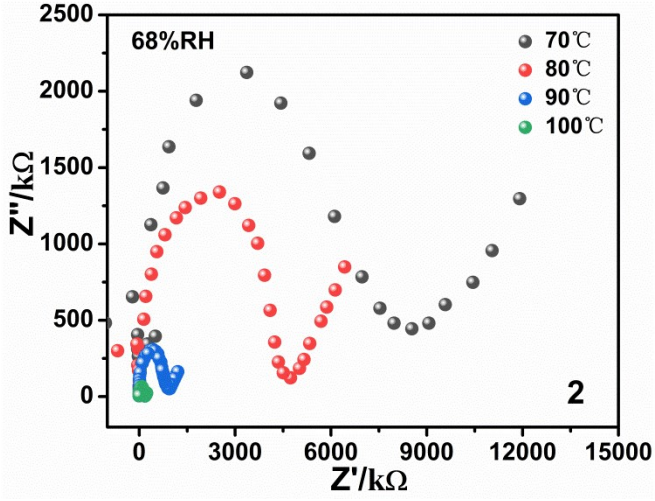

Fig. S9 Nyquist plots of **2** at 68% RH at different temperatures.

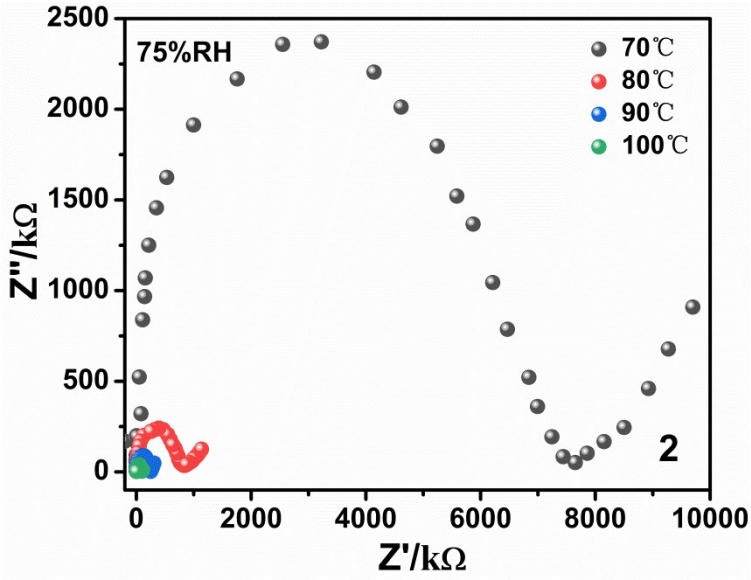

Fig. S10 Nyquist plots of **2** at 75% RH at different temperatures.

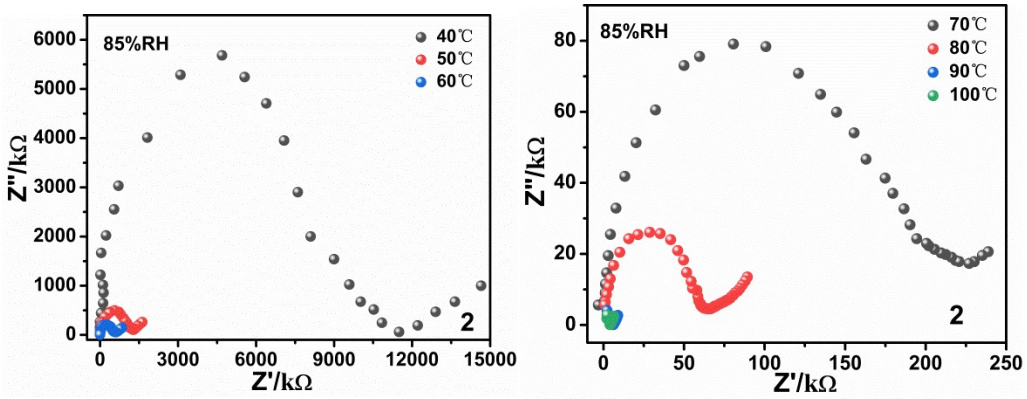

Fig. S11 Nyquist plots of **2** at 85% RHs at different temperatures.

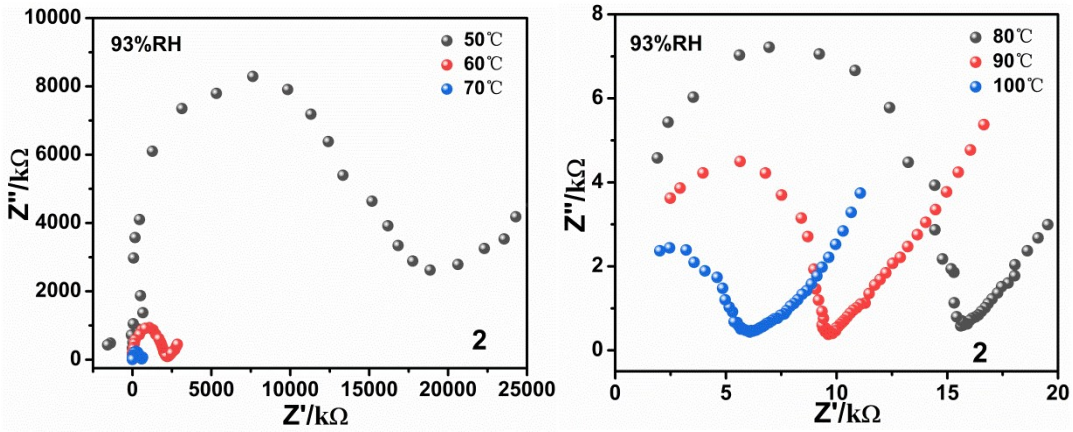

Fig. S12 Nyquist plots of **2** at different temperatures and at 93% RH.

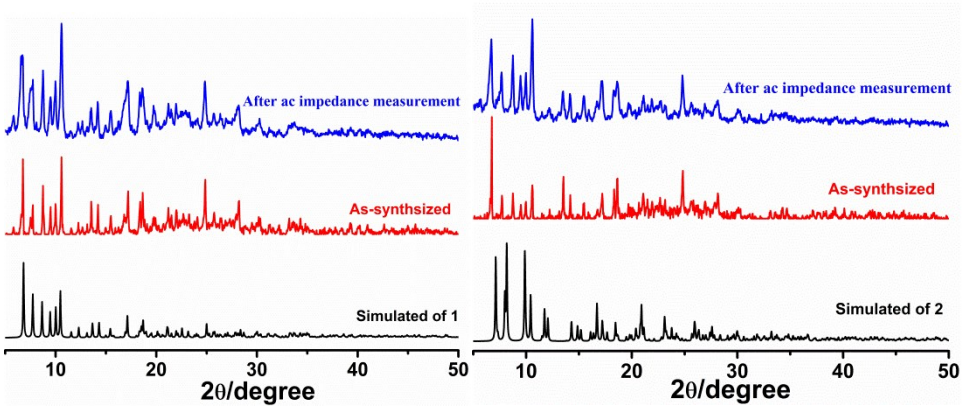

Fig. S13 PXRD patterns of **1** and **2** before and after electrochemical determinations.

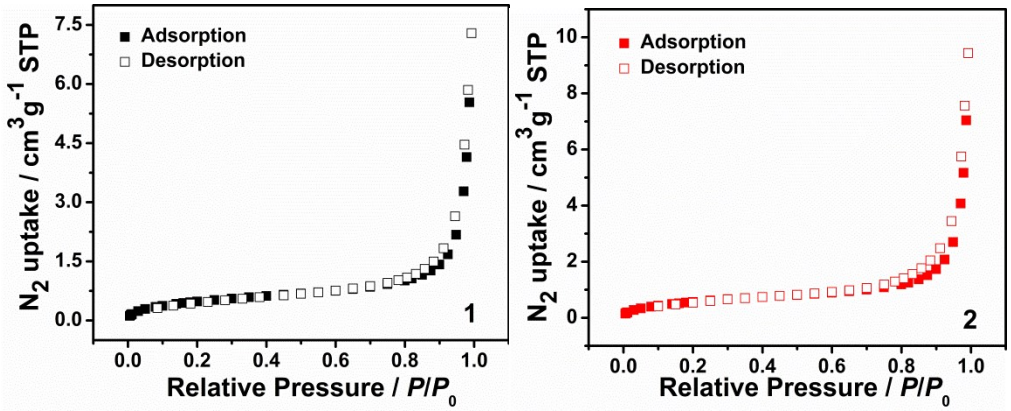

Fig. S14 N_2 adsorption/desorption curves of complex **1** and **2** at 77 K.

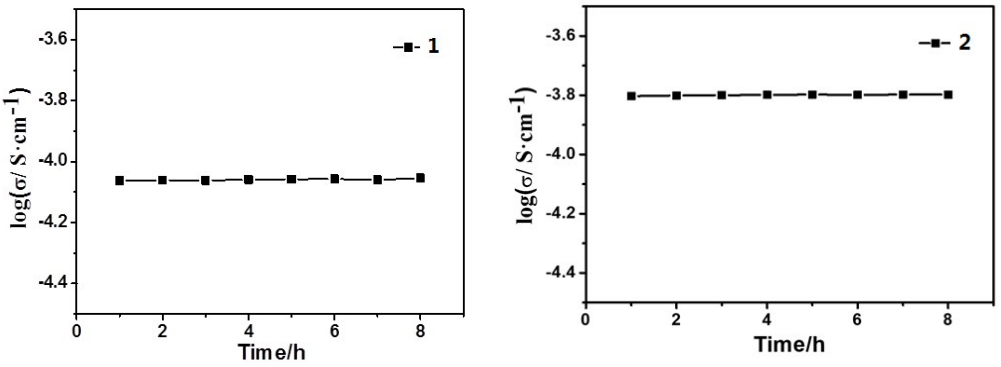

Fig. S15 Time-dependence of **1** and **2** at 98% RH and 100°C.

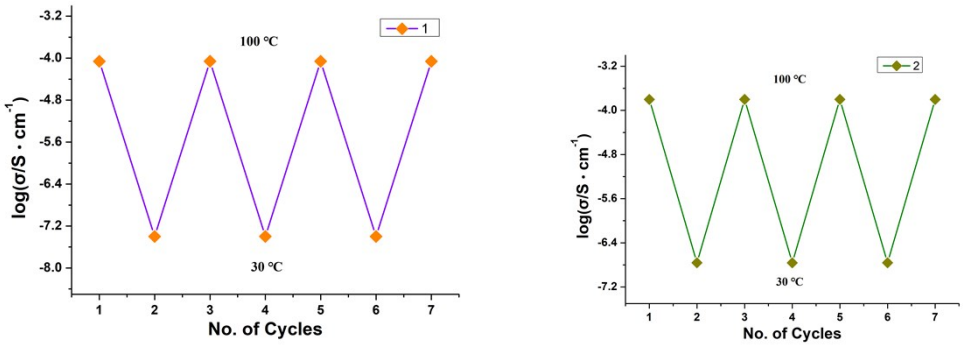

Fig. S16 Recyclability of **1** and **2** at 30 and 100°C and 98% RH.

Table S1 The σ values ($S \cdot cm^{-1}$) of **1** under various RHs and temperatures

	98%RH[a]	93%RH[a]	85%RH[a]	75%RH[a]
30℃[b]	4.00×10^{-8}			
40℃[b]	2.47×10^{-8}	1.62×10^{-7}		
50℃[b]	1.30×10^{-7}	5.71×10^{-7}	1.04×10^{-6}	5.20×10^{-8}
60℃[b]	4.16×10^{-7}	6.50×10^{-7}	2.47×10^{-6}	1.04×10^{-7}
70℃[b]	1.40×10^{-6}	1.68×10^{-6}	4.00×10^{-6}	2.26×10^{-7}
80℃[b]	5.77×10^{-6}	6.50×10^{-6}	7.42×10^{-6}	6.50×10^{-7}
90℃[b]	2.17×10^{-5}	3.46×10^{-5}	1.30×10^{-5}	5.77×10^{-6}
100℃[b]	0.87×10^{-4}	6.50×10^{-5}	5.47×10^{-5}	4.00×10^{-5}
[a] Relative humidity [b] Temperature.				

Table S2 The σ values ($S \cdot cm^{-1}$) of **2** under various RHs and temperatures

	98%RH[a]	93%RH[a]	85%RH[a]	75%RH[a]	68RH%[a]
30℃[b]	1.73×10^{-7}	-	-	-	-
40℃[b]	5.00×10^{-7}	3.46×10^{-8}	-	-	-
50℃[b]	1.30×10^{-6}	2.60×10^{-8}	4.00×10^{-7}	1.40×10^{-7}	-
60℃[b]	5.20×10^{-6}	2.60×10^{-7}	8.66×10^{-7}	1.92×10^{-7}	1.73×10^{-7}
70℃[b]	1.44×10^{-5}	8.66×10^{-7}	2.26×10^{-6}	2.55×10^{-7}	2.23×10^{-7}
80℃[b]	7.42×10^{-5}	2.60×10^{-5}	8.66×10^{-6}	2.29×10^{-6}	4.59×10^{-7}
90℃[b]	1.30×10^{-4}	8.66×10^{-5}	5.20×10^{-5}	9.43×10^{-6}	6.87×10^{-7}
100℃[b]	1.58×10^{-4}	1.01×10^{-4}	1.03×10^{-4}	1.94×10^{-5}	9.69×10^{-6}
[a] Relative humidity [b] Temperature.					