Supporting Information

Constructing porous MOF based on the assembly of layer framework and *p*-sulfonatocalix[4]arene nanocapsule with proton-conductive property

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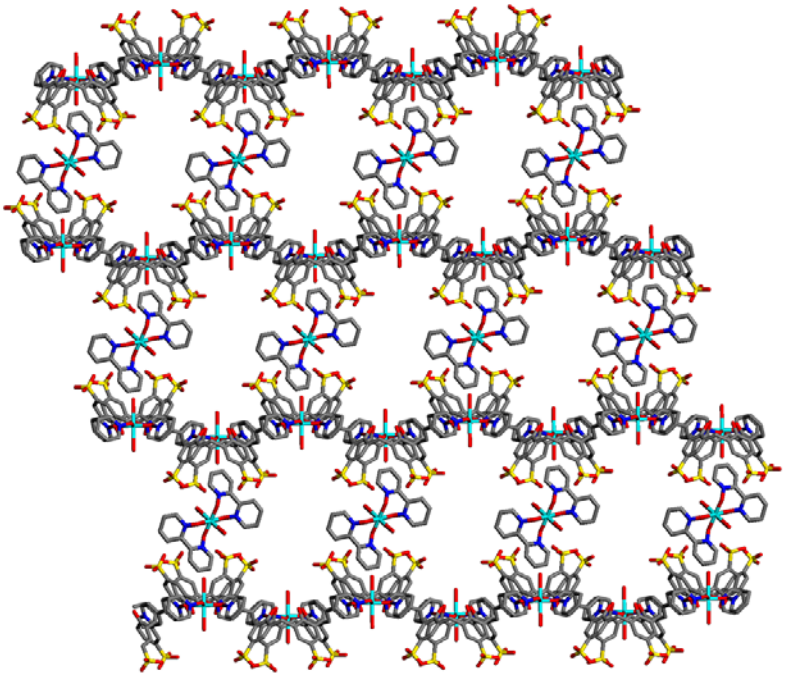

Fig S1 The Packing diagram down the *b* axis, showing the channel structure of compound **1**, the dissociative water molecules are omitted for clarity.

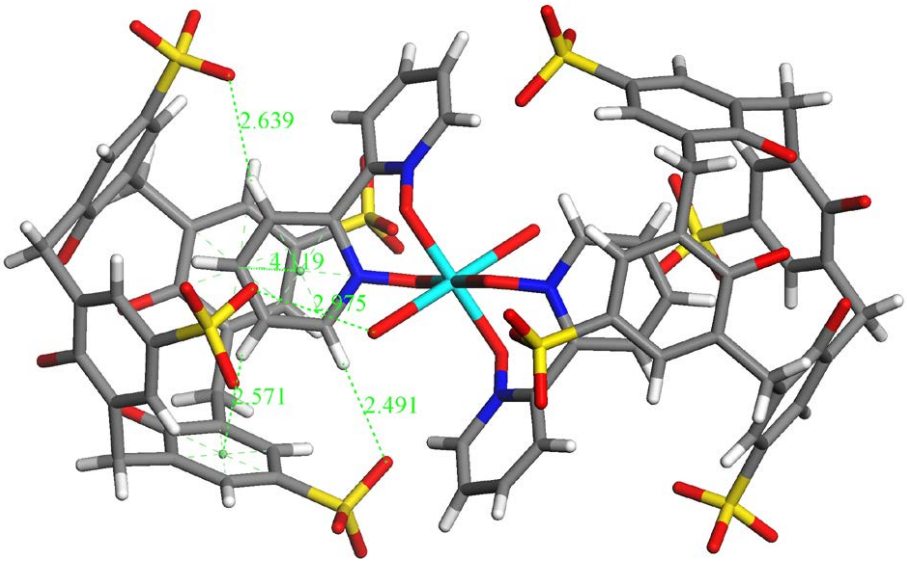

Fig S2 Structure of the supramolecular nanocapsule based on the *p*-sulfonatocalix[4]arenes and $[Cu(bpdo)_2 2H_2O]^{2+}$.

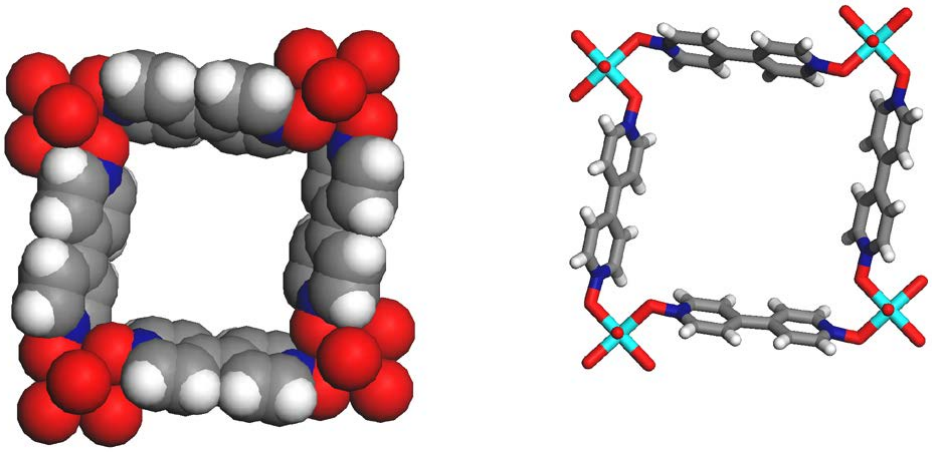

Fig S3 Structure of bowl shape frameworks based on the L and copper ions.

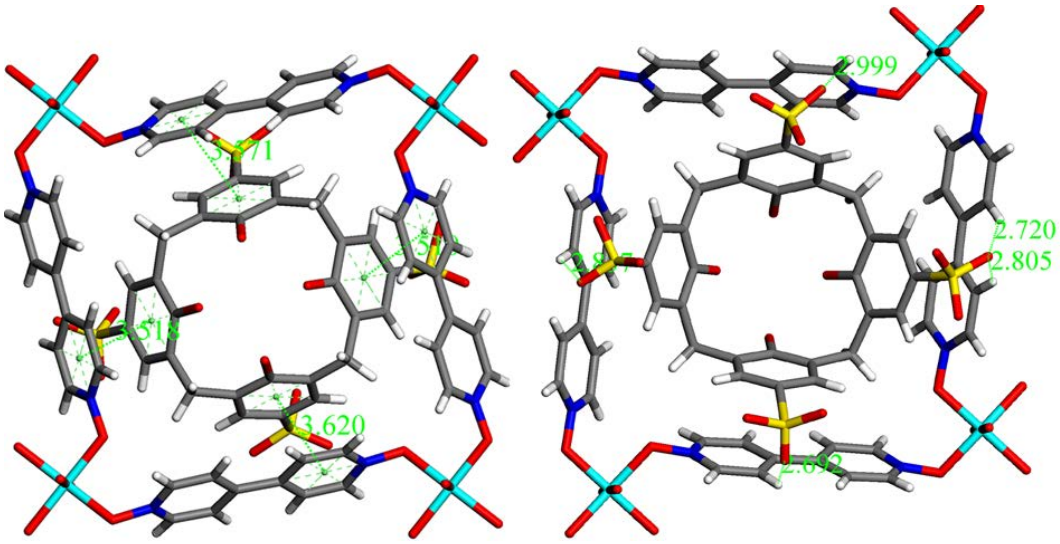

Fig S4 The weak interactions between the host bowl and the *p*-sulfonatocalix[4]arenes of capsules

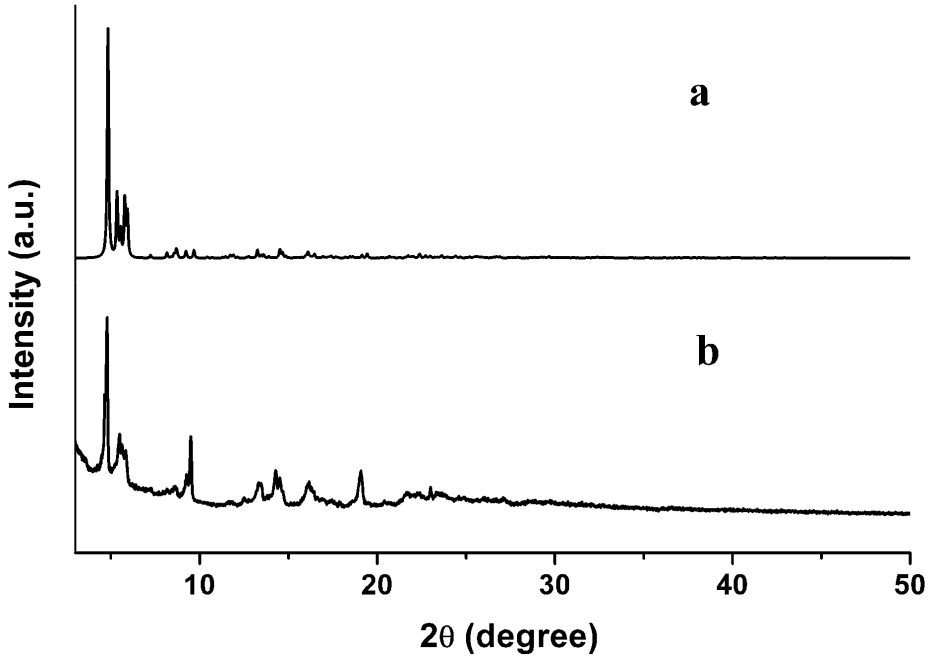

Fig S5 (a) Simulated from single crystal data; (b) Powder XRD patterns of compound **1**.

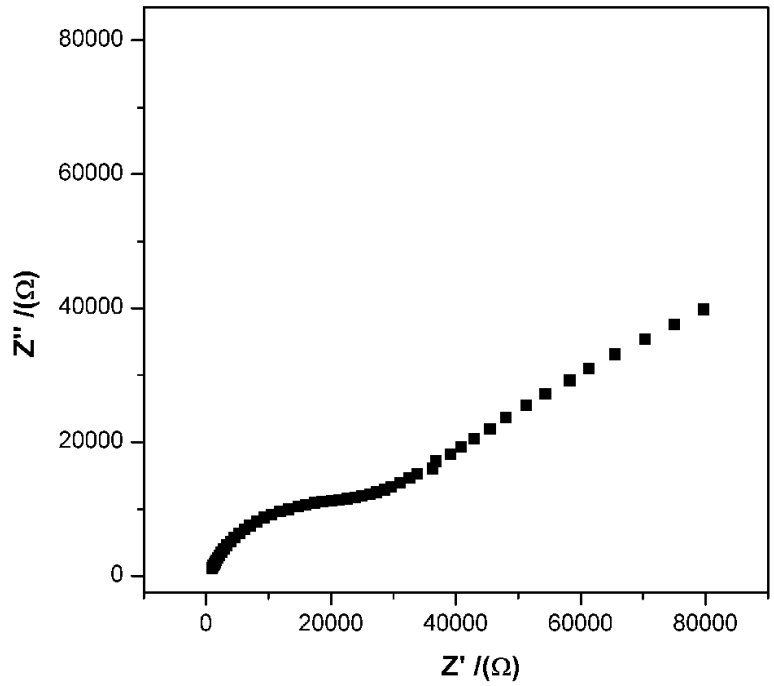

Fig S6 Nyquist plot of compound 1.

T / K	1000/K	R / Ω	σ = 1/RS
298	3.3557	5.16E+04	5.42E-07
308	3.2468	3.08E+04	9.08E-07
318	3.1447	1.11E+04	2.51E-06
328	3.0488	7158	3.90E-06
338	2.9586	3529	7.92E-06
348	2.8736	1864	1.50E-05
358	2.7933	907	3.08E-05

Table S1 Proton Conductivity at different temperatures under 95% RH for compound 1.

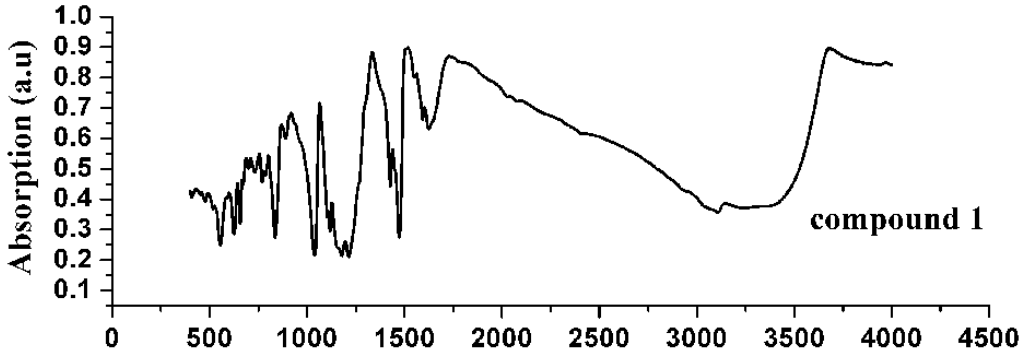

Fig S7 The infrared spectra of compounds **1**.

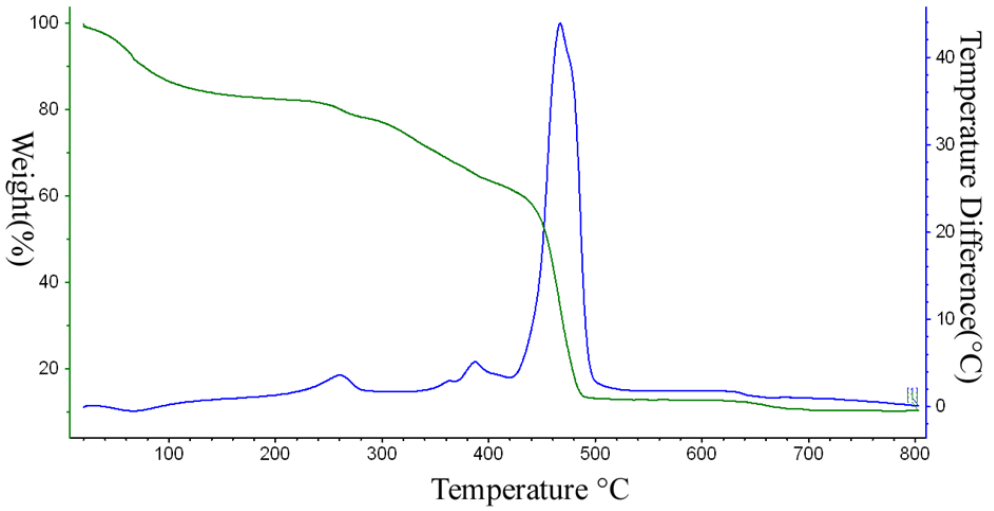

Fig S8 TGA of compound **1**.

The crystal structure of compound 1 contains both dissociative and coordinated water molecules. The observed mass loss (15.1%) while heating up to 120 ^{o}C is attributed to the loss of dissociative or coordinated water molecules.