

Electronic Supplementary Information for RSC Advance

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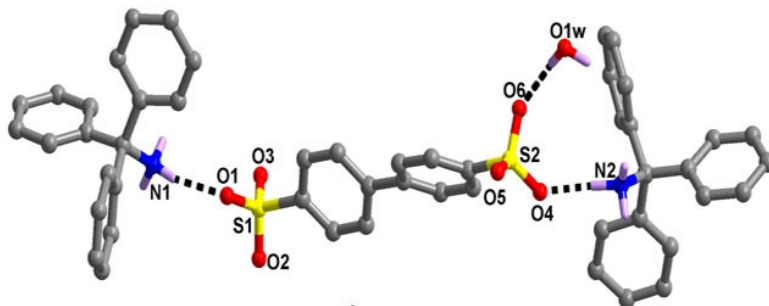
Electronic Supplementary Information (ESI)

**Nature of reactant and influence of water on the
supramolecular patterns and luminescent properties of organic
salts comprising (1,1'-biphenyl)-4,4'-disulfonate and
triphenylmethanaminium**

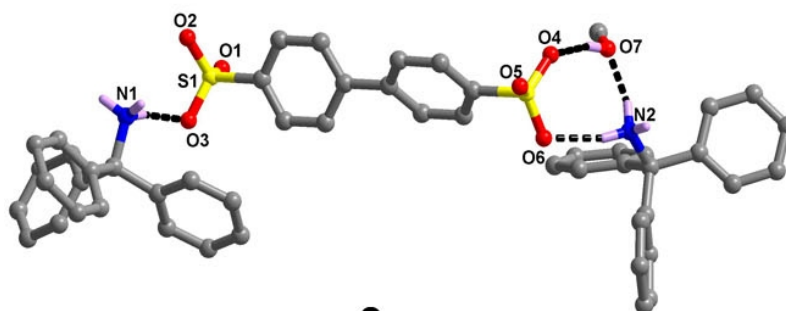
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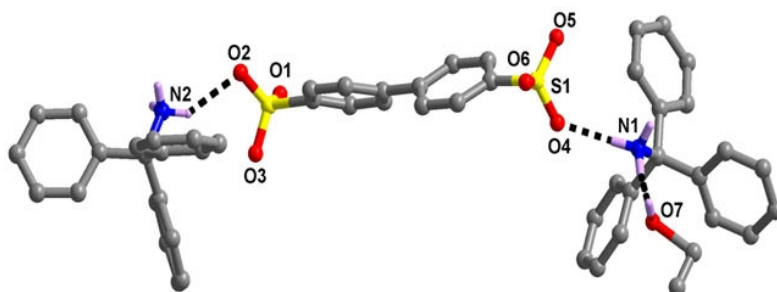
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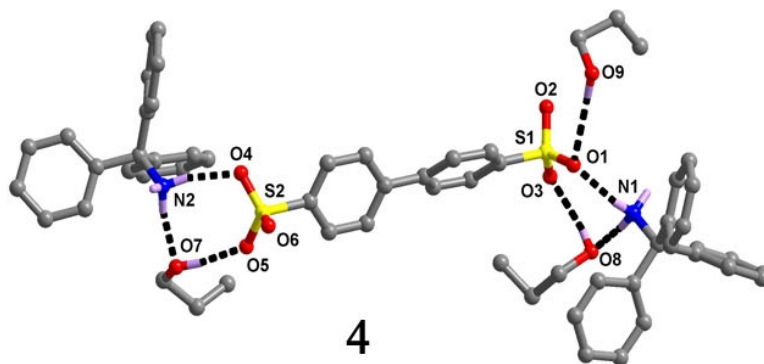
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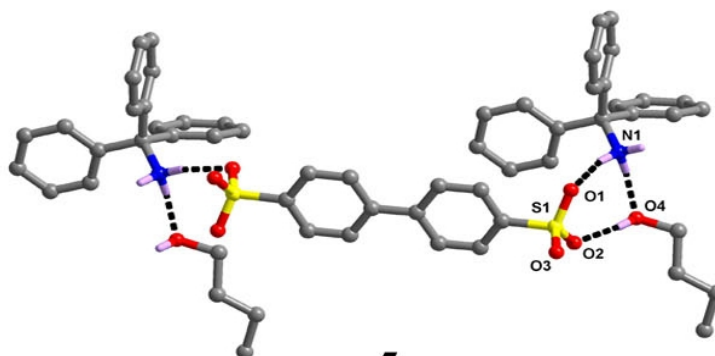
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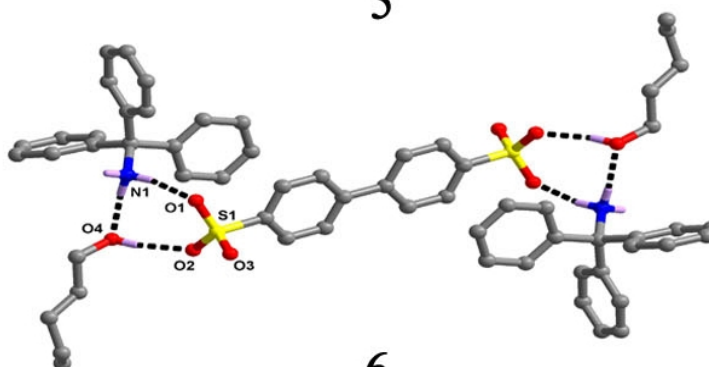
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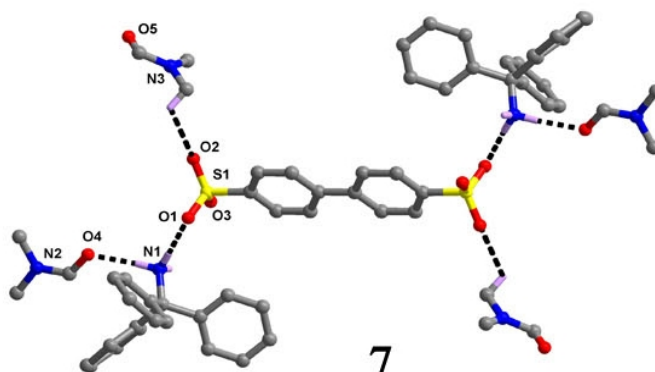
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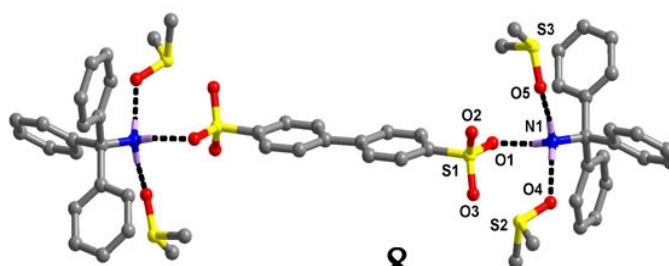
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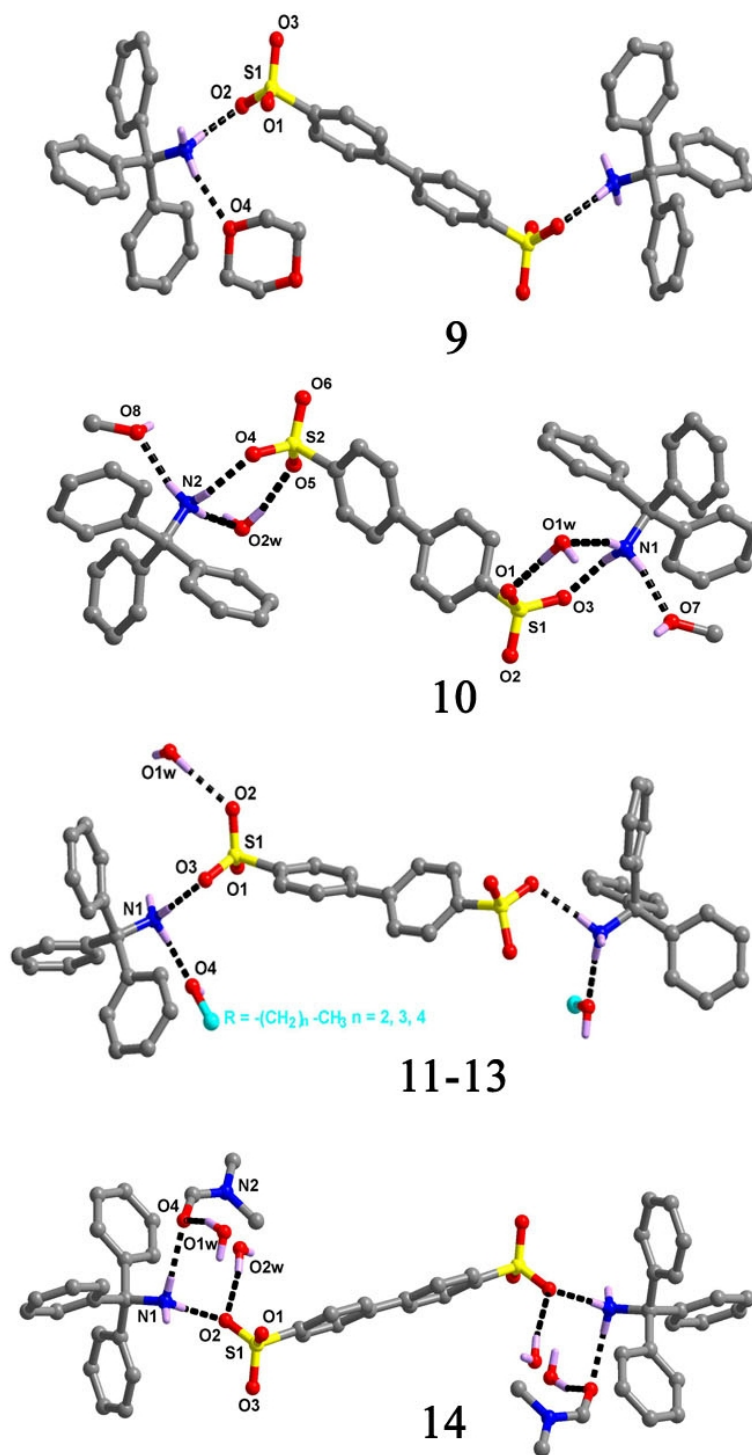


Fig. S1 Structures of salts 1-14 with the hydrogen-bonding interactions denoted as black dashed lines.

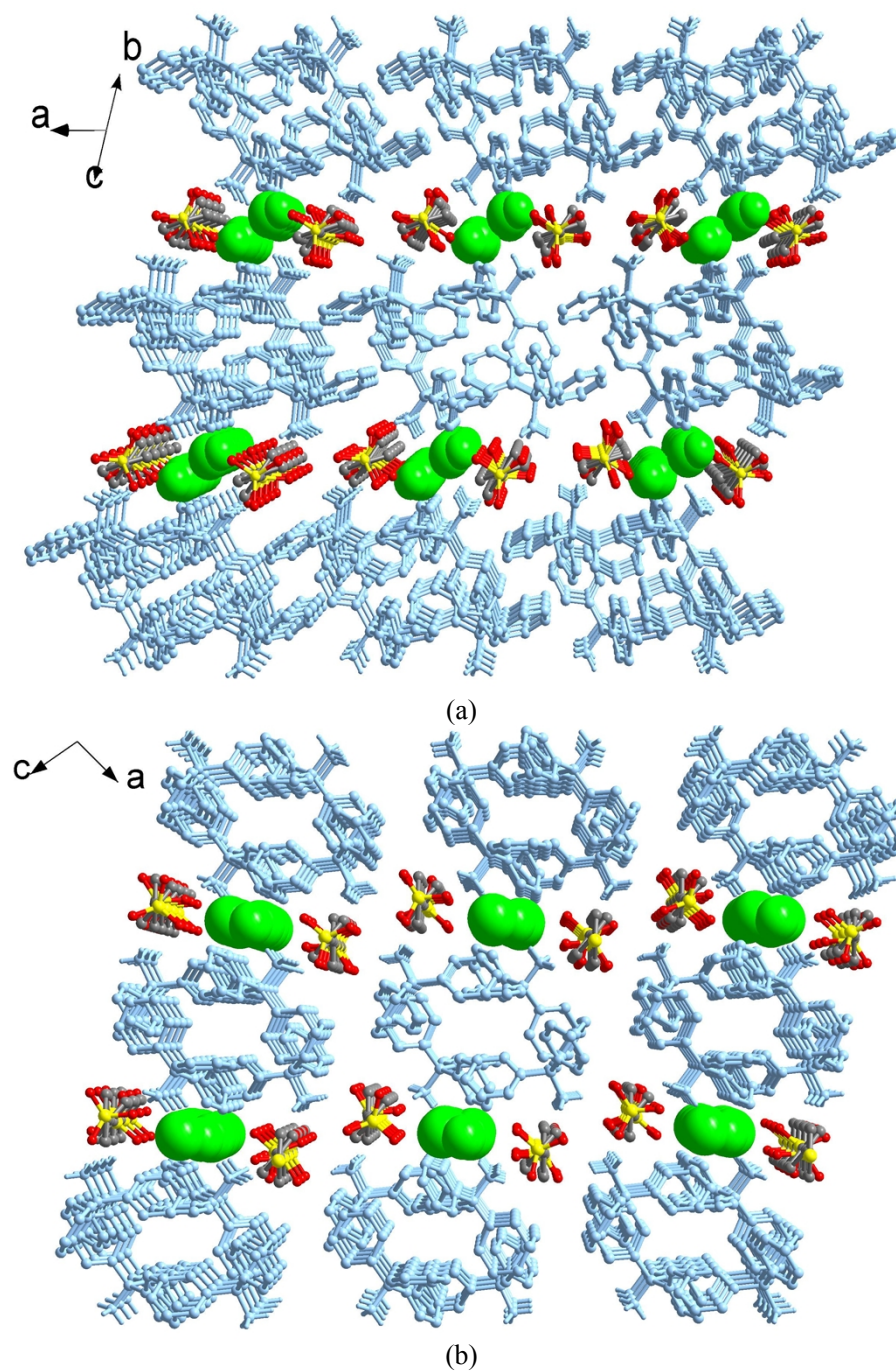


Fig. S2 Type I packing diagram tuned by H₂O in salt **1** (a) and MeOH in salt **2** (b) (pale blue ball-and-stick: HTPMA⁺; green space filling: solvent molecules).

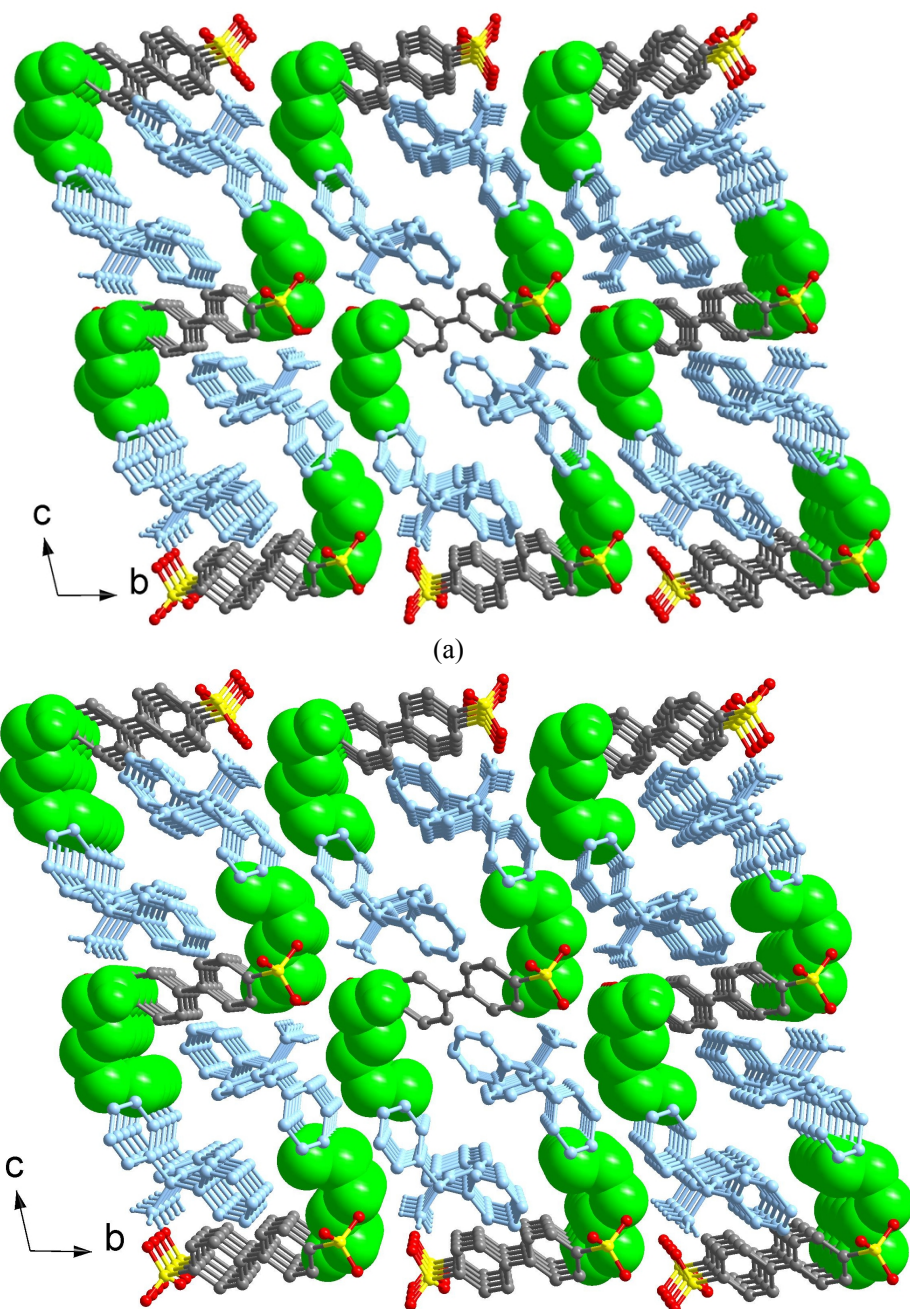


Fig. S3 Type III packing diagram tuned by *n*-BuOH in salt 5 (a) and *n*-PeOH in salt 6 (b) (pale blue ball-and-stick: HTPMA⁺; green space filling: solvent molecules).

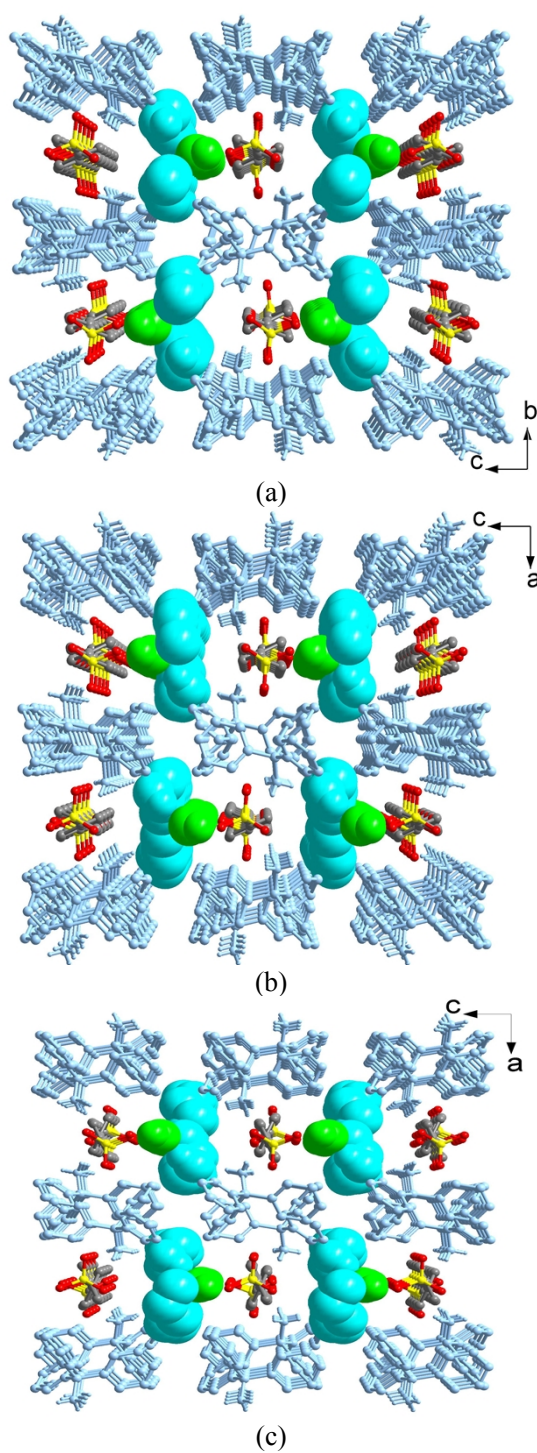


Fig. S4 Type V packing diagram tuned by H₂O and *n*-PrOH in salt **11** (a), *n*-BuOH in salt **12** (b) and *n*-PeOH in salt **13** (c) (pale blue ball-and-stick: HTPMA⁺; turquoise and green space filling: solvent and H₂O molecules).

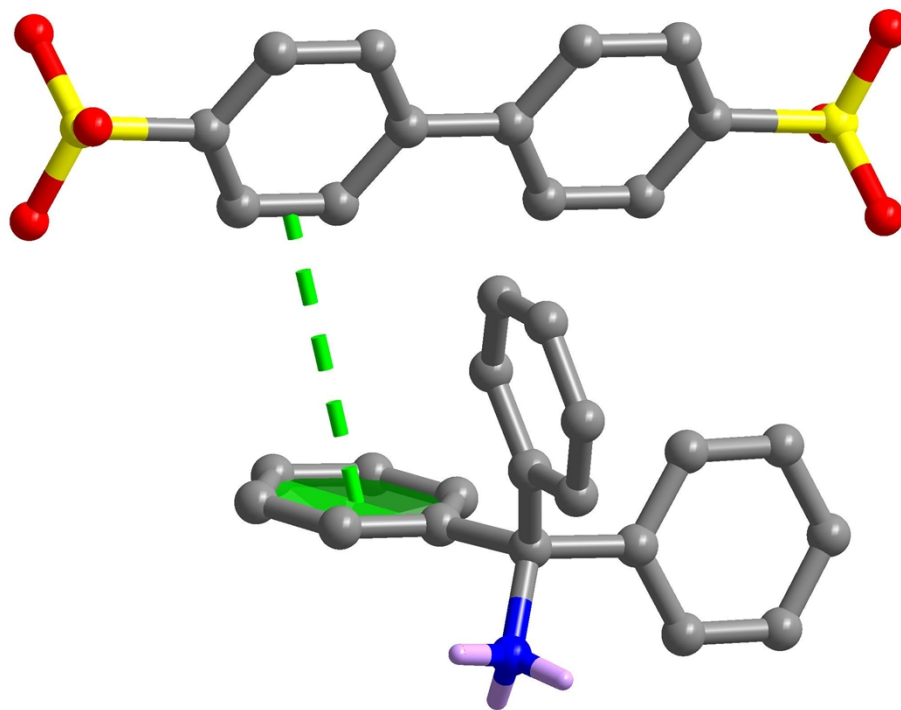


Fig. S5 Side-to-plane $\pi \cdots \pi$ interactions (green dashed lines) in salt 14.

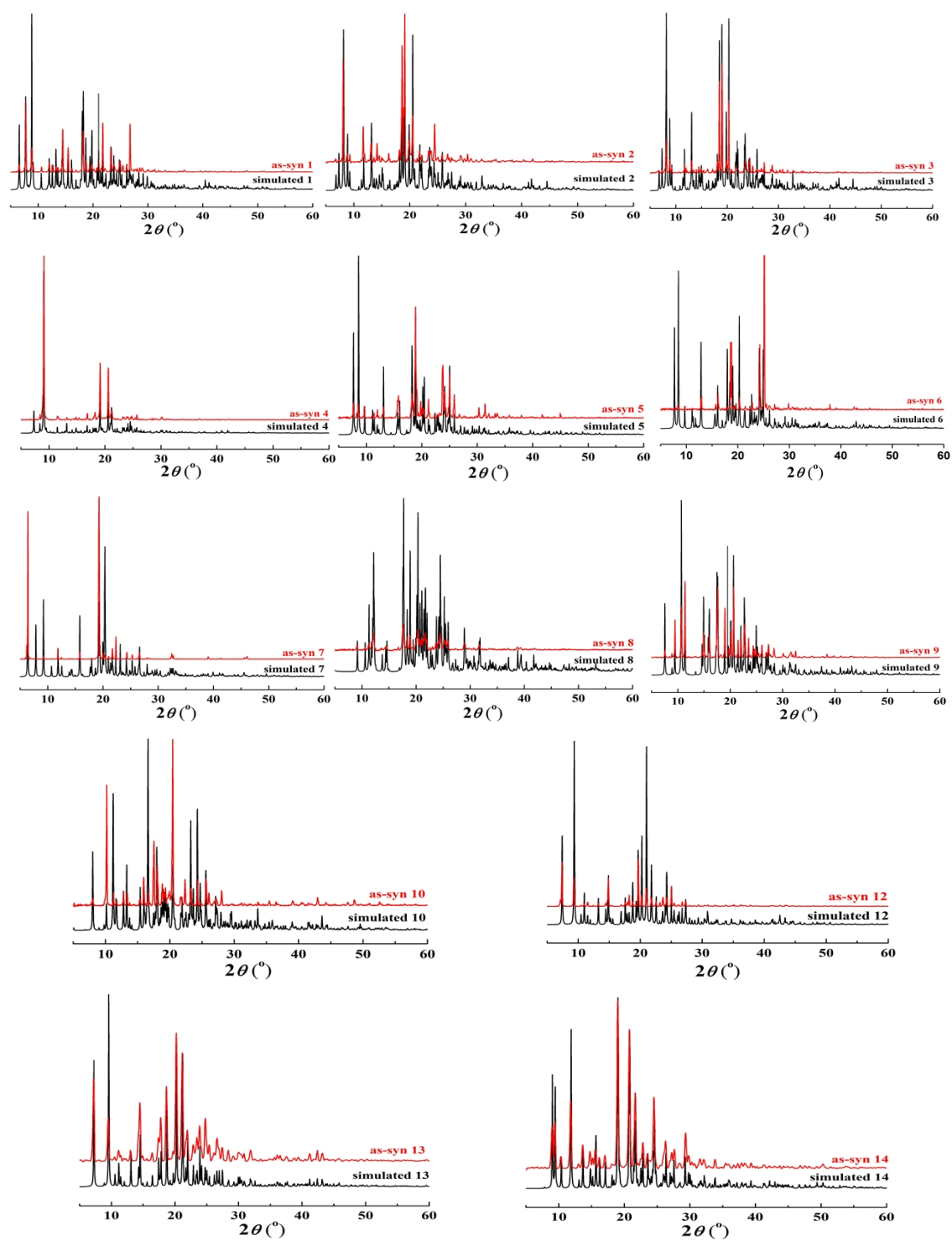


Fig. S6. PXRD patterns of salts 1-10 and 12-14 at room temperature.

Thermogravimetric analysis. To examine the thermal stability, powder X-ray diffraction (PXRD) patterns for solid samples of salts **1-10** and **12-14** are firstly measured at room temperature as illustrated in Fig. S6. The patterns are highly similar to their simulated ones (based on the single-crystal X-ray diffraction data), indicating that the single-crystal structures are really representative of the bulk of the corresponding samples. Their stabilities were

analyzed on crystalline samples by thermogravimetric analyses (TGA) from room temperature to 600 °C at a rate of 10 °C min⁻¹, under air. As shown in Fig. S7, salts **1-10** and **12-14** exhibit the similar weight loss with the first step corresponding to the release of solvent molecules which occurred in the range of 70-103, 80-116, 102-156, 92-115, 101-136, 107-146, 94-124, 70-135, 154-

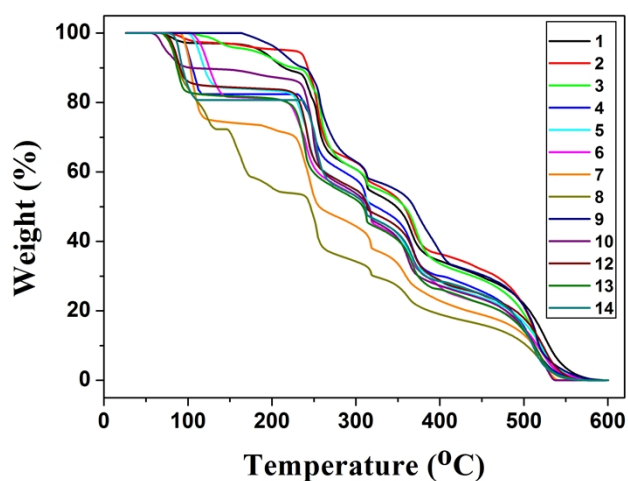


Fig. S7 TG curves of salts **1-10** and **12-14**.

240, 57-100, 69-115, 70-113, and 80-112 °C, respectively. The observed weight loss of 2.34% in **1**, 3.58% in **2**, 5.32% in **3**, 17.52% in **4**, 15.36% in **5**, 17.61% in **6**, 25.61% in **7**, 27.04% in **8**, 9.72% in **9**, 10.87% in **10**, 16.43% in **12**, 18.71% in **13**, and 20.95% in **14** is reasonably close to their calculated value (2.12% in **1**, 3.70% in **2**, 5.24% in **3**, 17.79% in **4**, 15.11% in **5**, 17.47% in **6**, 25.98% in **7**, 27.28% in **8**, 9.57% in **9**, 10.73% in **10**, 16.64% in **12**, 18.92% in **13**, and 21.12% in **14**). Then, the following weight losses for salts **1-10** and **12-14** indicated the decomposition of the organic components. Totally, the pure solvent salts, especially, the *n*-PrOH, *n*-BuOH and *n*-PeOH induced salts **4-6**, exhibit higher decomposition temperature than those of the mixed solvent salts **12** and **13**. This result is mainly originated from their supramolecular structures. As shown in Fig. S4, the mixed solvents in salts **12** and **13** filled in the channels without any hindrance of host network, which may reduce the binding force to the solvents. On the contrary, the

solvents in salts **5** and **6** are apparently intersecting with the $-\text{SO}_3$ groups of BPDSA²⁻ dianions (Fig. S3). Such arrangement restricts the removal of solvent molecules to some extent, thus enhancing the decomposition temperature of these salts. Likewise, the high decomposition temperature of 154 °C for salt **9** is also caused by such reason.

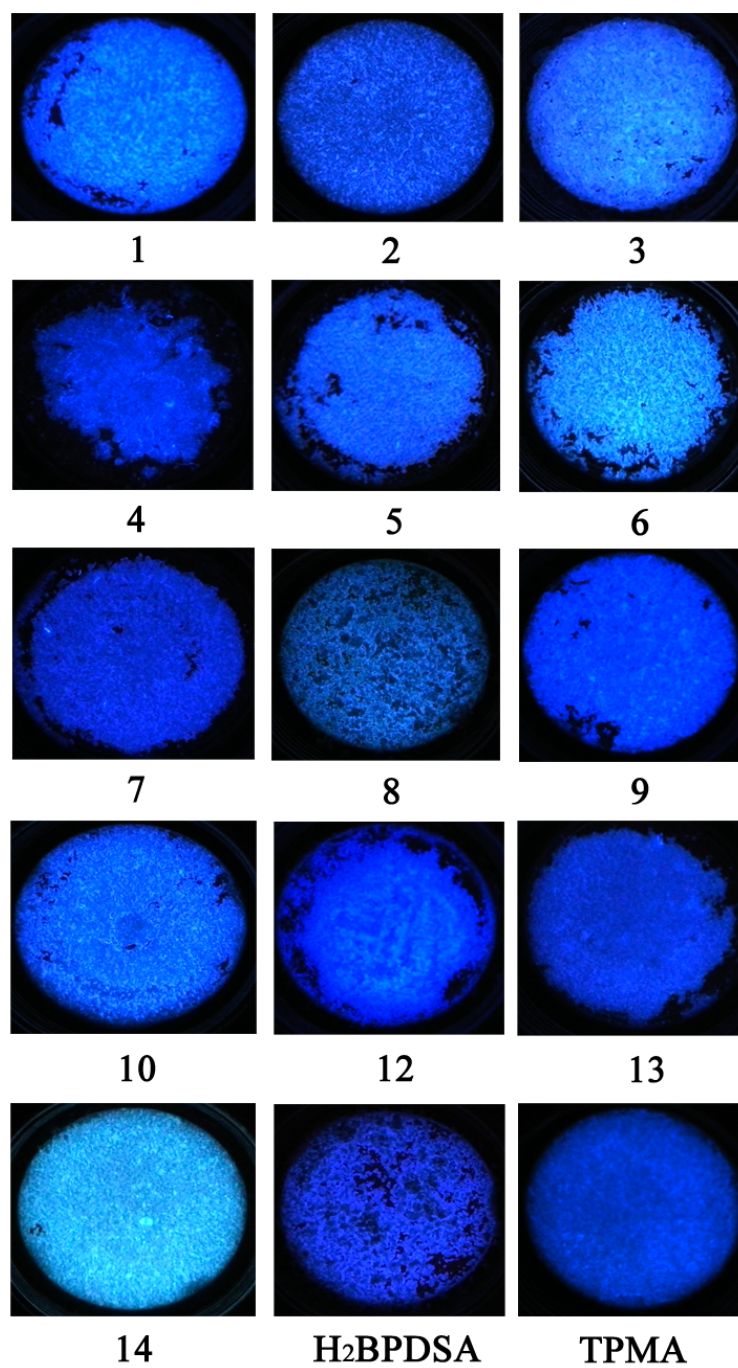


Fig S8. Photographs for sample of H₂BPDSA, TPMA, salts **1-10** and **12-14** under UV source.