Fig S1. Simulated and experimental powder diffraction pattern of ULMOF-2
Fig S2. Simulated and experimental powder diffraction pattern of ULMOF-3
Fig S3. Ellipsoidal view of the 2D LiO layer from [100] direction in ULMOF-2

Fig S4. Local environment of Lithium center in ULMOF-2
Fig S5. Local environment of Lithium center (Li1) in ULMOF-3

Fig S6. Local Environment of lithium center (Li2) in ULMOF-3
Fig S7: Coordination of lithium center with 4’4’–SDB ligand in ULMOF-3

Fig. S8. TGA-DSC plot of ULMOF-2 under ambient condition (compressed air). The blue line represents TGA plot of ULMOF-2 while the red line shows the DSC signal associated with it.
Fig. S9. TGA-DSC plot of ULMOF-3 under ambient condition (compressed air). The blue line represents TGA plot of ULMOF-2 while the red line shows the DSC signal associated with it.