Electronic Supplementary Material (ESI) for RSC Advances.

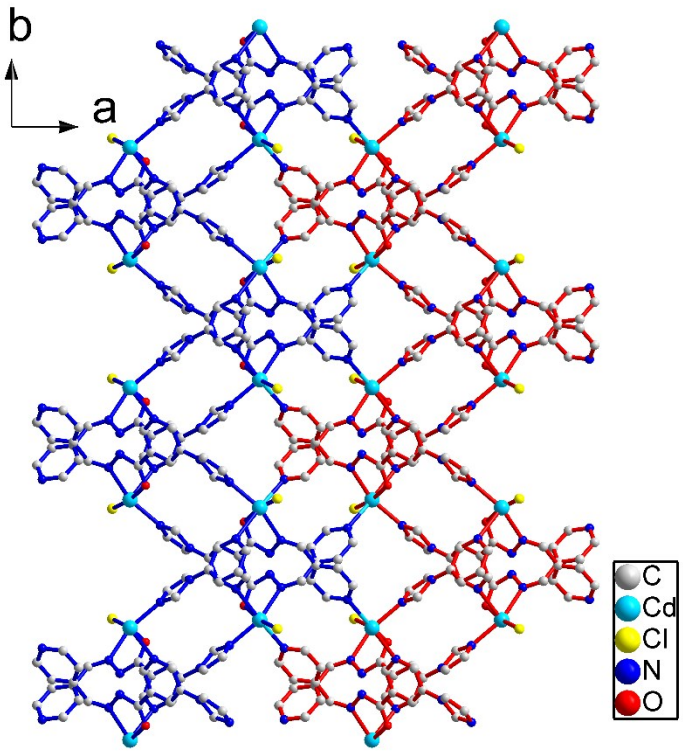

Fig. S1 The parallel arrangement of 2D networks along *a* axis and connected through Cd–$N_{pyridyl}$ bonds to form a 3D framework in **2**.

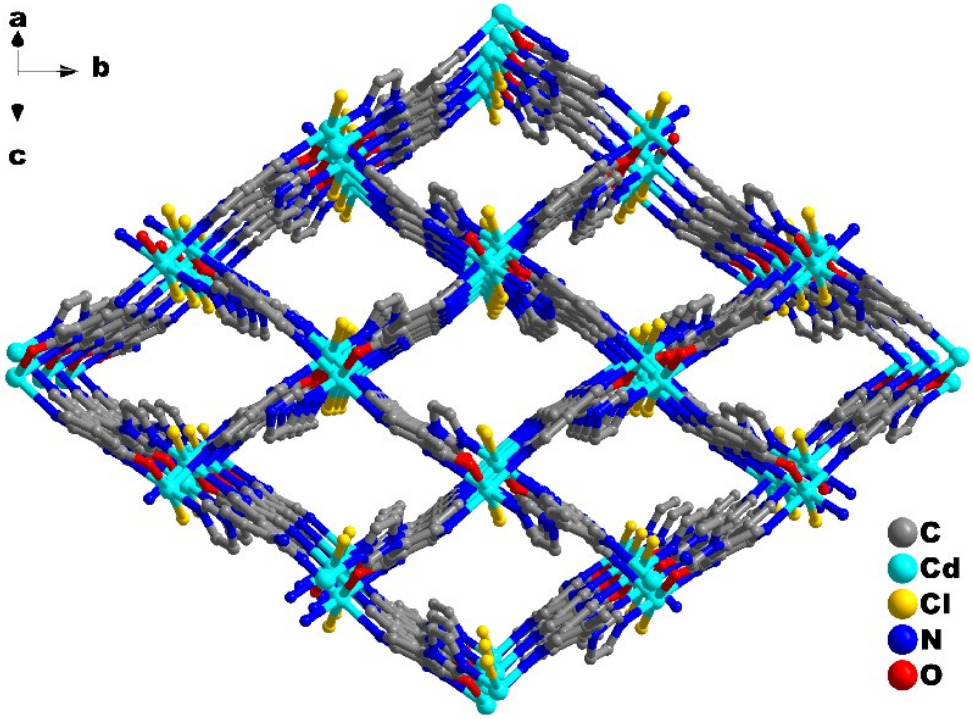

Fig. S2 The 3D framework of **2**, and the rhombic channels view along the crystallographic [101] direction.

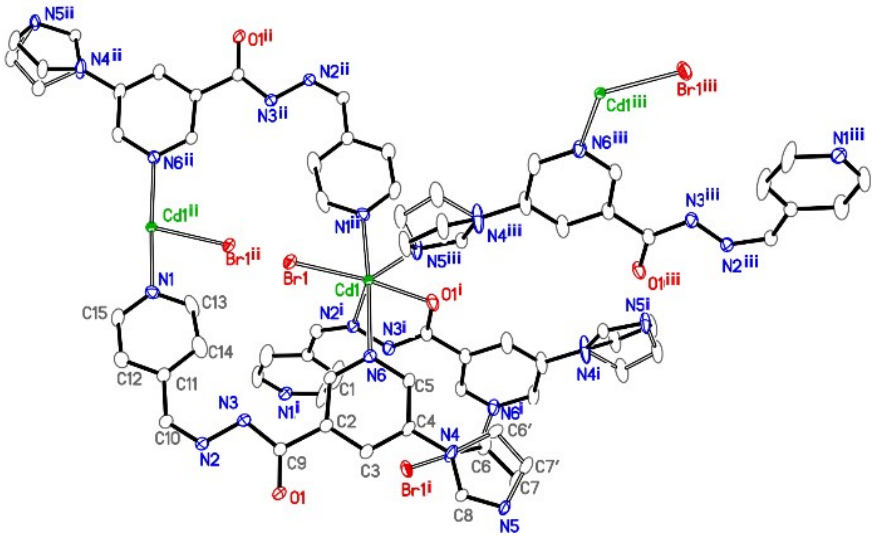

Fig. S3 The coordination environment of Cd(II) centers in **3**, with displacement ellipsoids drawn at the 50% probability level.

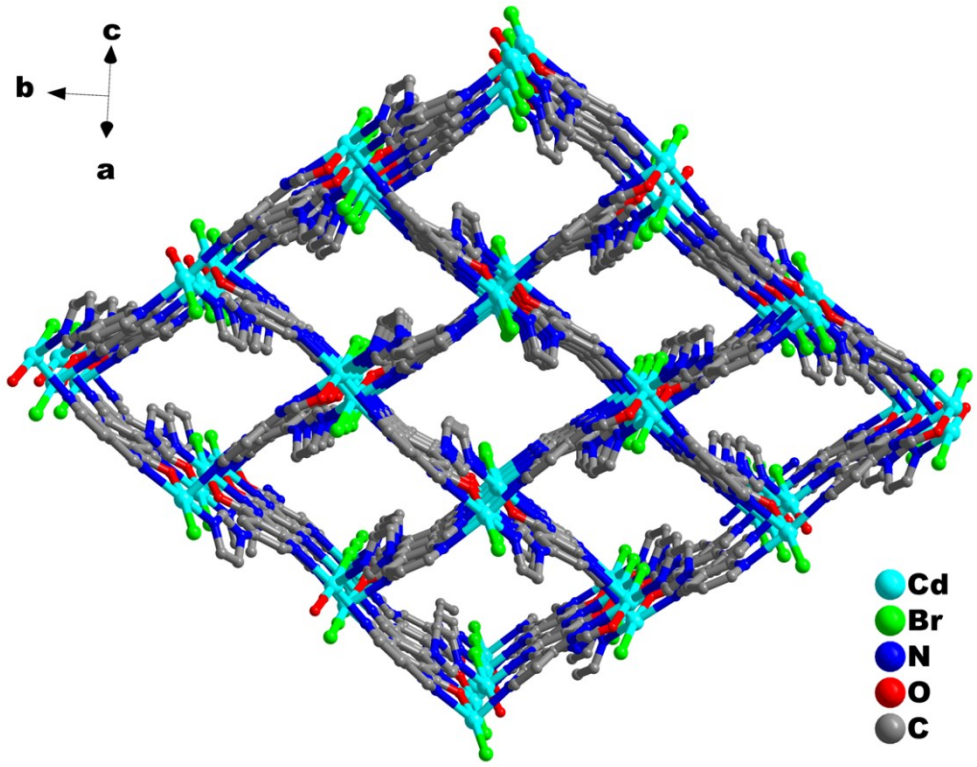

Fig. S4 The 3D framework of **3**, and the rhombic channels view along the crystallographic [101] direction.

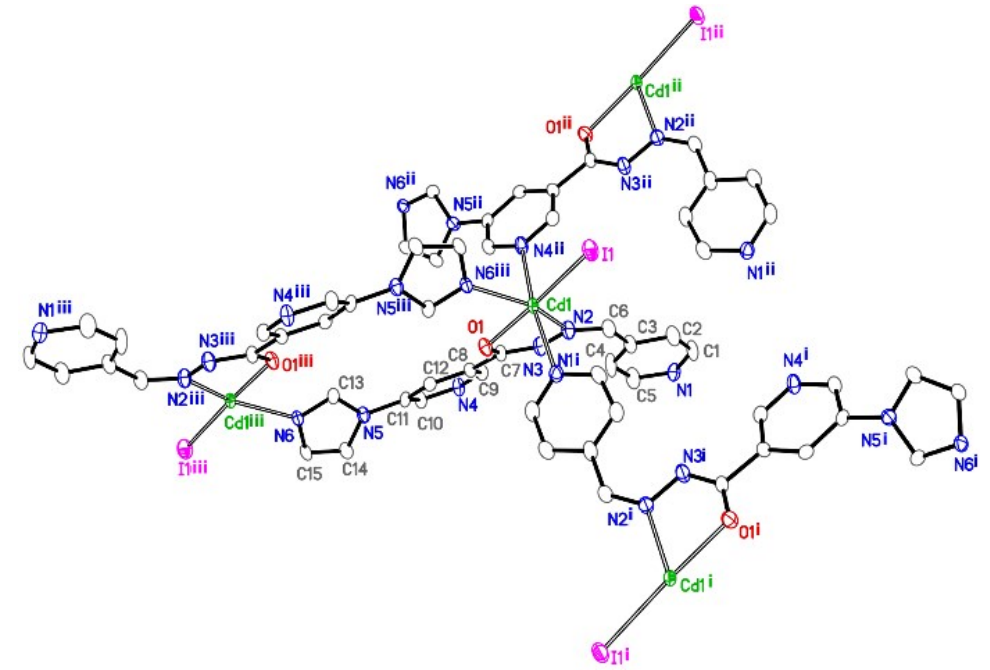

Fig. S5 The coordination environment of Cd(II) centers in **4**, with displacement ellipsoids drawn at the 50% probability level.

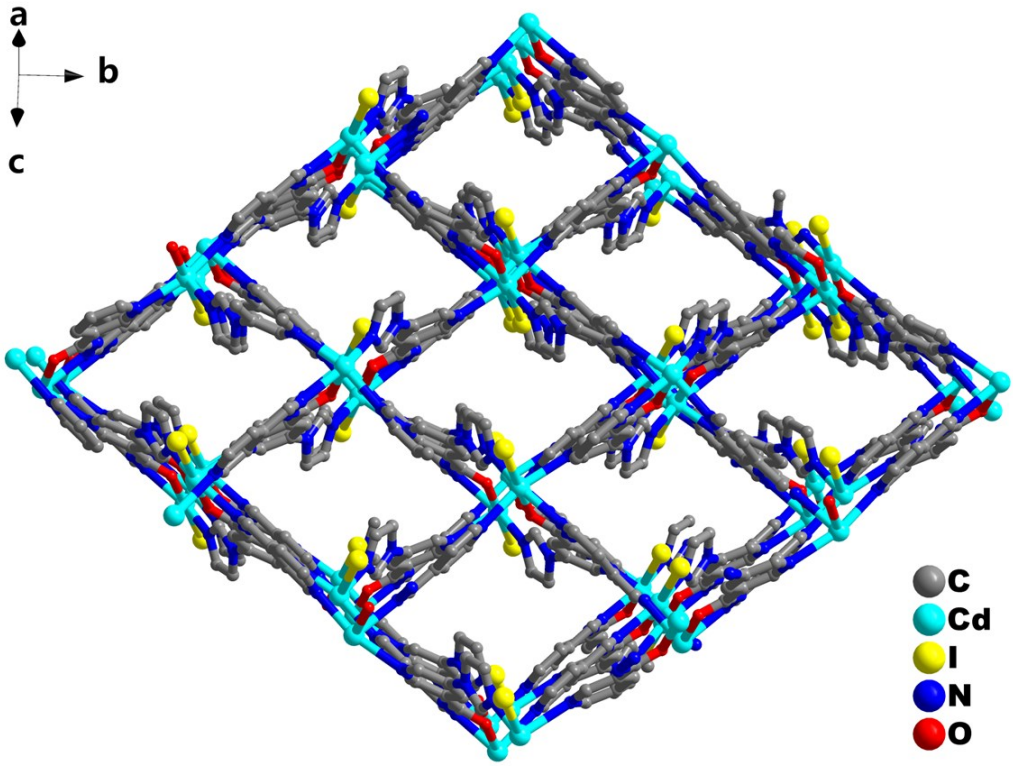

Fig. S6 The 3D framework of **4**, and the rhombic channels view along the crystallographic [101] direction.

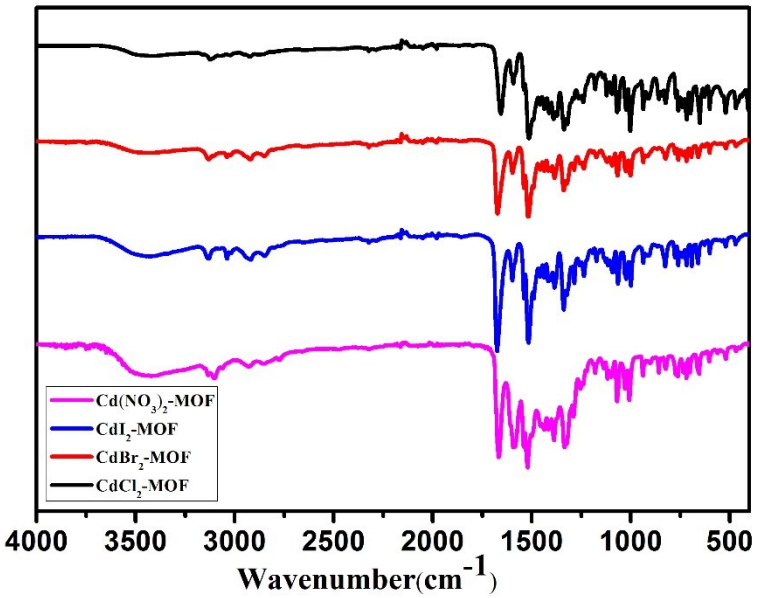

Fig. S7 IR spectra of **1-4**.

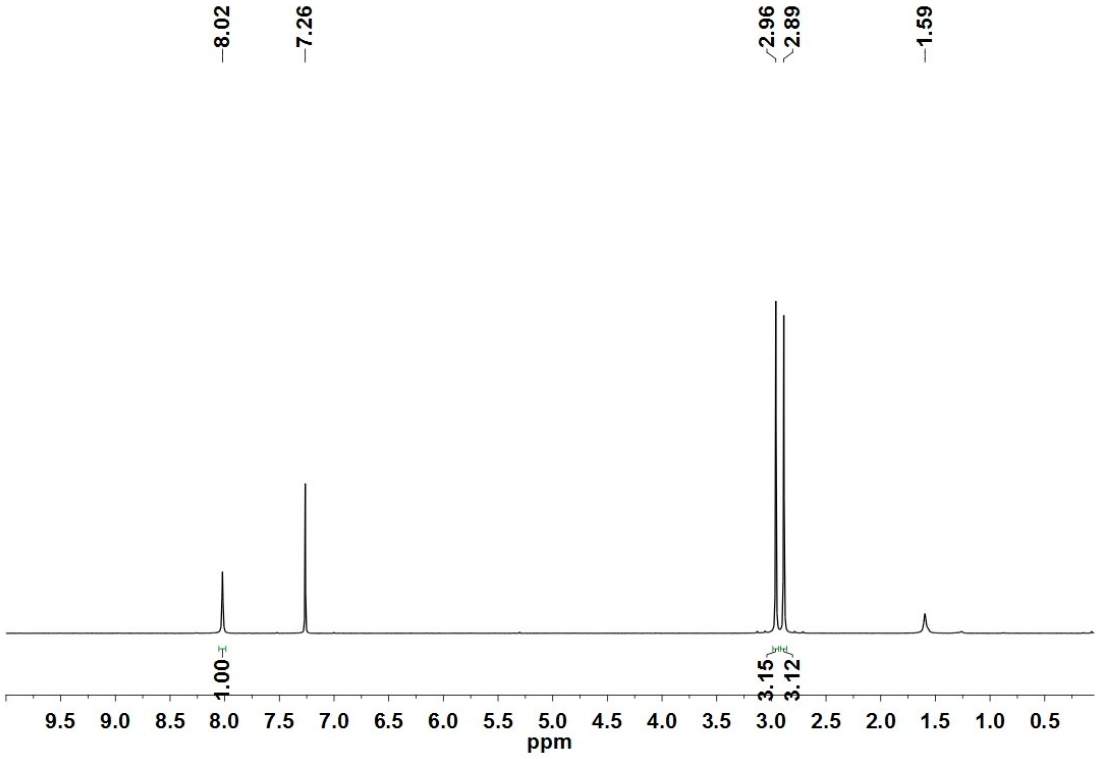

Fig. S8 ^{1}H NMR spectrum ($CDCl_3$) showing the existence of *N*,*N*-Dimethylformamide guest molecules in the channels. The Cd(II) MOFs are not soluble in normal solvents, so the ^{1}H NMR measurement was performed on the $CDCl_3$ extract of the as-synthesized MOF crystals.

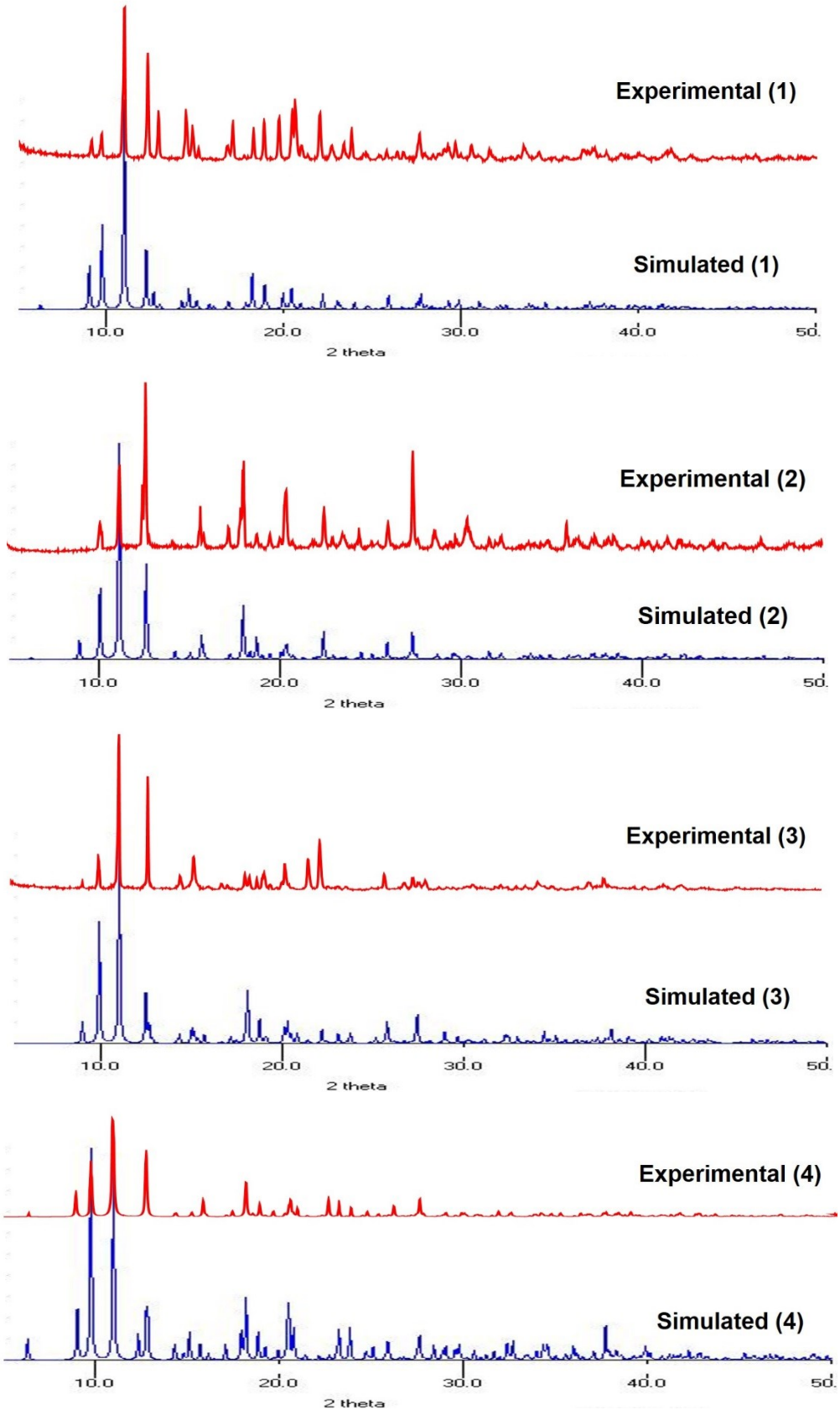

Fig. S9 PXRD patterns of **1-4**.