Table S1: Crystal data, data collection and refinement details for **6** and **7**.

Compound (no. in text)	**1**	**2**
Crystal data		
Chemical formula	$CdCo(OH)(VO_4)$	$CdCu(OH)(VO_4)$
Space group, Z	*Pnam*, 4	*Pnma*, 4
Formula weight, M_r (g/mol)	303.28	331.87
a (Å)	7.561(2)	7.37008(10)
b (Å)	8.873(2)	5.8260(10)
c (Å)	5.999(1)	9.368(2)
V (Å^3)	402.47(16)	402.24(12)
Calculated density, D_x (g/cm^3)	5.009	5.084
Absorption coefficient, μ (mm^{-1})	11.482	12.652
F (000)	556	564
Data collection		
Crystal-detector distance (mm)	30	30
Rotation width (°)	2	2
Total no. of frames	393	465
Collection time per frame (s)	200	100
Absorption correction	multi-scan	multi-scan
Range of Miller indices	$-10 \le h \le 10$ $-12 \le k \le 12$ $-8 \le l \le 8$	$-10 \le h \le 10$ $-7 \le k \le 8$ $-13 \le l \le 13$
Reflections collected/unique	4075/645	4334/644
Observed reflections [$I > 2\sigma(I)$]	539	574
R_{int}	0.0384	0.0361
θ_{max} (°)	30.10	29.954
Refinement		
Extinction coefficient, k[a]	0.0077(7)	0.0042(10)
Refined parameters	47	51
R-indices [$F^2 > 2\sigma(F^2)$] [b]	$R_1 = 0.0603$ $wR_2 = 0.1190$	$R_1 = 0.0444$ $wR_2 = 0.1018$
R-indices (all data) [b]	$R_1 = 0.0731$ $wR_2 = 0.1253$	$R_1 = 0.0523$ $wR_2 = 0.1053$
Goodness-of-fit, S	1.094	1.194
$(\Delta/\sigma)_{max}$	0.000	0.000

[a] $F_c^* = kF_c[1 + 0.001 \times F_c^2\lambda^3/\sin(2\theta)]^{-1/4}$; [b] $w = 1/[\sigma^2(F_o^2) + (0.0212P)^2 + 21.7016P]$ for **6**, $w = 1/[\sigma^2(F_o^2) + (0.0350P)^2 + 8.729P]$ for **7**.

Table S2: Fractional atomic coordinates and equivalent isotropic displacement parameters for **6** and **7**.

Atom	*x*	*y*	*z*	U_{eq} (Å^2)	*sof*
6					
Cd	0.14085(16)	0.18001(12)	0.2500	0.0306(4)	0.5
Co	0.5000	0.0000	0.0000	0.0145(4)	0.5
V	0.8725(3)	0.1735(2)	0.7500	0.0158(5)	0.5
O1	0.8844(13)	0.2811(8)	0.5142(13)	0.040(2)	1.0
O2	1.038(2)	0.049(2)	0.7500	0.108(9)	0.5
O3	0.6883(14)	0.0571(13)	0.7500	0.032(3)	0.5
O4	0.6472(12)	0.0744(10)	0.2500	0.0165(18)	0.5
7					
Cd	0.85685(13)	0.2500	0.69286(9)	0.0242(3)	0.5
Cu	1.0000	0.0000	1.0000	0.0133(3)	0.5
V	1.1295(2)	-0.2500	0.66071(18)	0.0130(4)	0.5
O1	0.8559(10)	0.2500	0.9341(8)	0.0147(13)	1.0
O2	0.6826(13)	0.2500	0.4574(12)	0.039(3)	0.5
O3	0.966(2)	-0.2500	0.540(2)	0.097(10)	0.5
O4	0.6108(11)	-0.0089(10)	0.7419(8)	0.045(2)	0.5
H	0.75(3)	0.2500	0.977(18)	0.05(5)	0.5

Table S3: Anisotropic displacement parameters (Å^2) for **6** and **7**.

Atom	U_{11}	U_{22}	U_{33}	U_{23}	U_{13}	U_{12}
6						
Cd	0.0308(6)	0.0168(5)	0.0442(8)	0.000	0.000	-0.0032(4)
Co	0.0173(7)	0.0104(6)	0.0159(8)	-0.0009(7)	-0.0004(6)	0.0000(6)
V	0.0119(9)	0.0118(9)	0.0237(12)	0.000	0.000	-0.0024(7)
O1	0.076(6)	0.027(4)	0.017(4)	0.000(3)	-0.006(4)	-0.030(4)
O2	0.039(9)	0.083(14)	0.20(3)	0.000	0.000	0.039(9)
O3	0.025(5)	0.042(6)	0.028(6)	0.000	0.000	-0.024(5)
O4	0.013(4)	0.024(4)	0.012(4)	0.000	0.000	-0.002(3)
7						
Cd	0.0392(5)	0.0153(4)	0.0181(4)	0.000	-0.0039(3)	0.000
Cu	0.0103(7)	0.0128(8)	0.0159(7)	0.000	0.0010(6)	0.000
V	0.0163(6)	0.0058(5)	0.0177(6)	0.0008(4)	-0.0067(4)	0.0002(4)
O1	0.016(3)	0.004(3)	0.025(4)	0.000	-0.003(3)	0.000
O2	0.036(5)	0.009(3)	0.072(7)	0.000	0.042(5)	0.000
O3	0.068(12)	0.061(11)	0.16(2)	0.000	-0.088(13)	0.000
O4	0.069(5)	0.017(3)	0.048(4)	0.006(3)	-0.034(4)	-0.011(3)