

Supporting Information

Topotactic structural conversion and hydration- dependent thermal expansion in robust $\text{LnM}^{\text{III}}(\text{CN})_6 \cdot n\text{H}_2\text{O}$ and flexible $\text{ALnFe}^{\text{II}}(\text{CN})_6 \cdot n\text{H}_2\text{O}$ frameworks (A = Li, Na, K; Ln = La-Lu, Y; M = Co, Fe; $0 \leq n \leq 5$)

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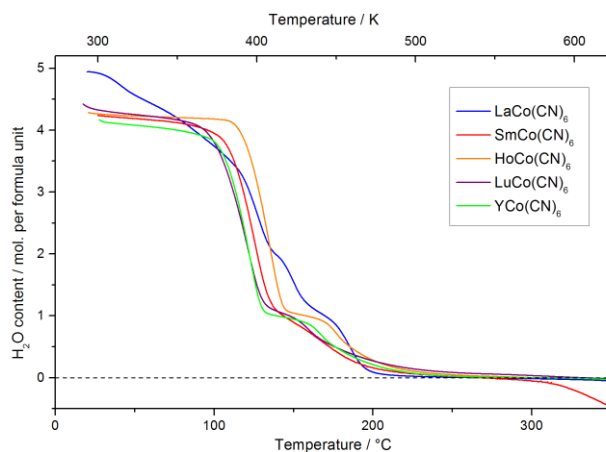


Figure S1 Thermogravimetrically-determined water content for a selection of $\text{LnCo}(\text{CN})_6 \cdot n\text{H}_2\text{O}$ compounds ($\text{Ln} = \text{La}, \text{Sm}, \text{Ho}, \text{Lu}, \text{Y}$).

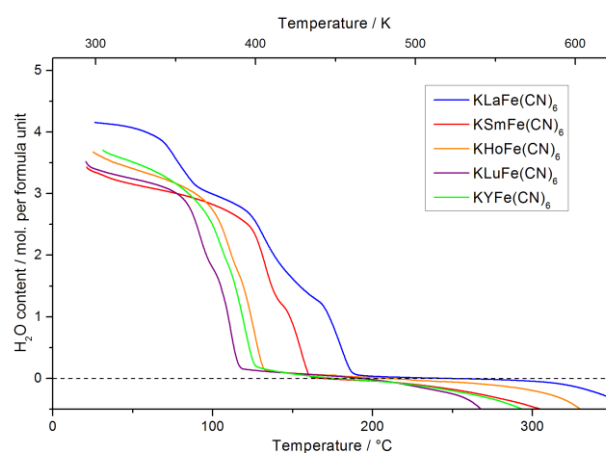


Figure S2 Thermogravimetrically-determined water content for a selection of $\text{KLnFe}(\text{CN})_6 \cdot n\text{H}_2\text{O}$ compounds ($\text{Ln} = \text{La}, \text{Sm}, \text{Ho}, \text{Lu}, \text{Y}$). Significant Ln-dependence is observed in the temperature required for full dehydration.

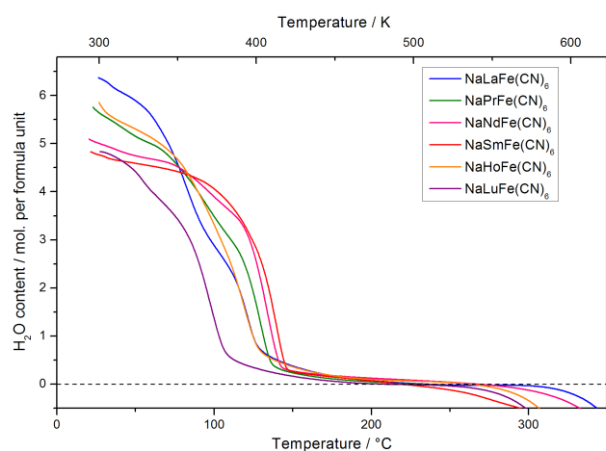


Figure S3 Thermogravimetrically-determined water content for a selection of $\text{NaLnFe}(\text{CN})_6 \cdot n\text{H}_2\text{O}$ compounds ($\text{Ln} = \text{La}, \text{Pr}, \text{Nd}, \text{Sm}, \text{Ho}, \text{Lu}$). The calculated water content is higher than expected based on the crystal structures (Figure S7), possibly due to incomplete drying of surface water from the sample prior to measurement.

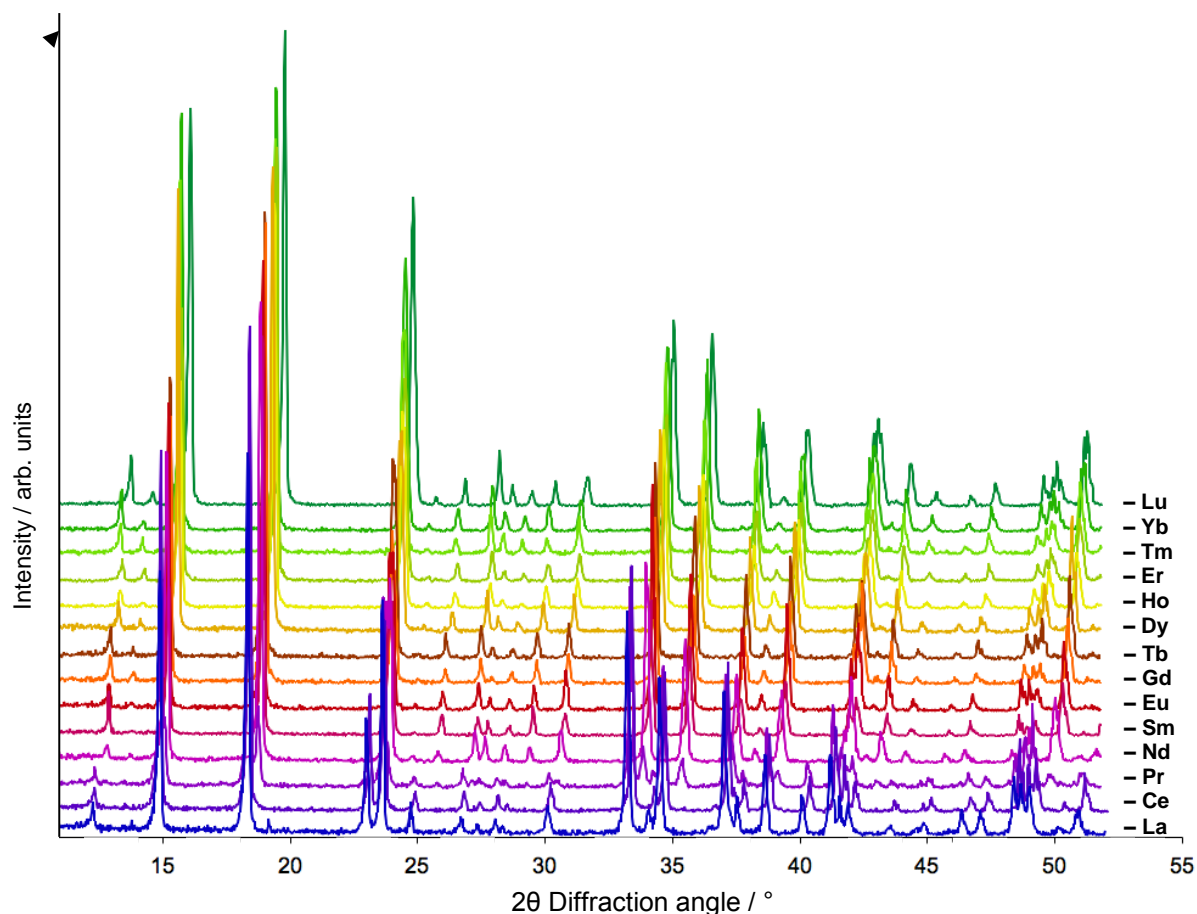


Figure S4 Laboratory X-ray powder diffraction patterns for the as-synthesised, hydrated $\text{LnCo}(\text{CN})_6 \cdot n\text{H}_2\text{O}$ series. The transition from hexagonal pentahydrates to orthorhombic tetrahydrates is evident between Pr and Nd.

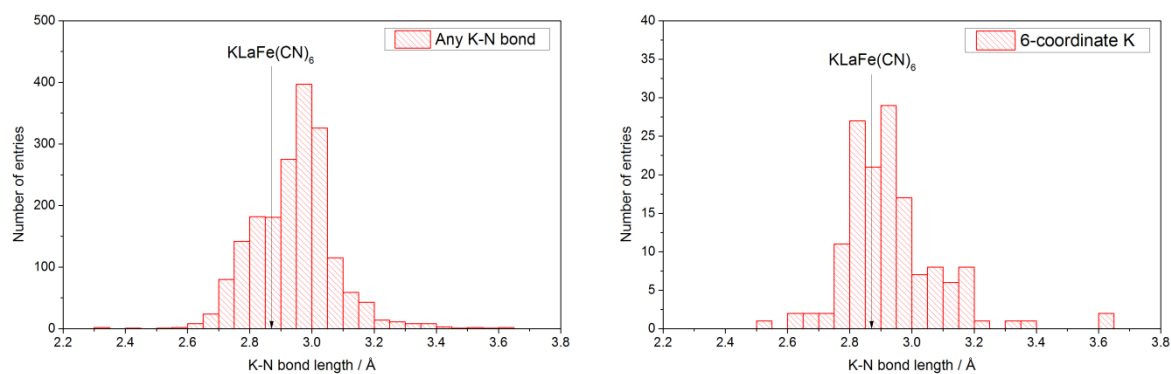


Figure S5 Average lengths of bonds in the Cambridge Structural Database for a) any K-N bond, and b) K-N bonds for 6-coordinate K. The observed $\text{K} \cdots \text{N}$ distance in $\text{KLaFe}(\text{CN})_6$ (2.87 Å, indicated by the arrow) appears to be typical for K interacting with six N atoms, supporting the assertion that this type of interaction is present and is the cause of the structural transformation upon dehydration.

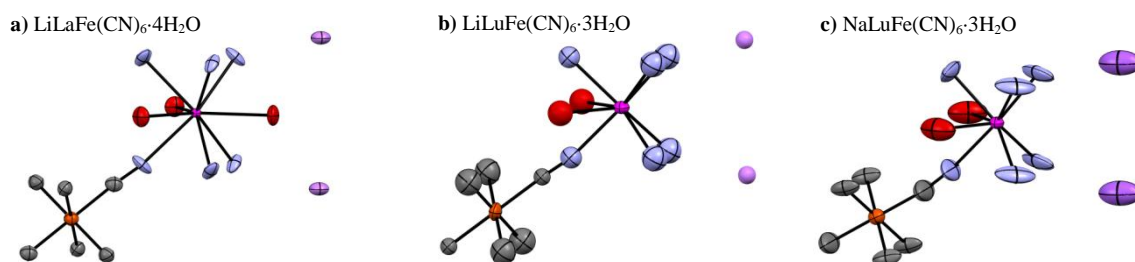


Figure S6 Structures of a) $\text{LiLaFe}(\text{CN})_6 \cdot 4\text{H}_2\text{O}$, b) $\text{LiLuFe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}$, and c) $\text{NaLuFe}(\text{CN})_6 \cdot 3\text{H}_2\text{O}$ determined from SCXRD data. The pink ellipsoids/spheres represent 50:50 $\text{A}^+:\text{O}$ sites. The O atoms and Li^+ ions in (b) are modelled isotropically.

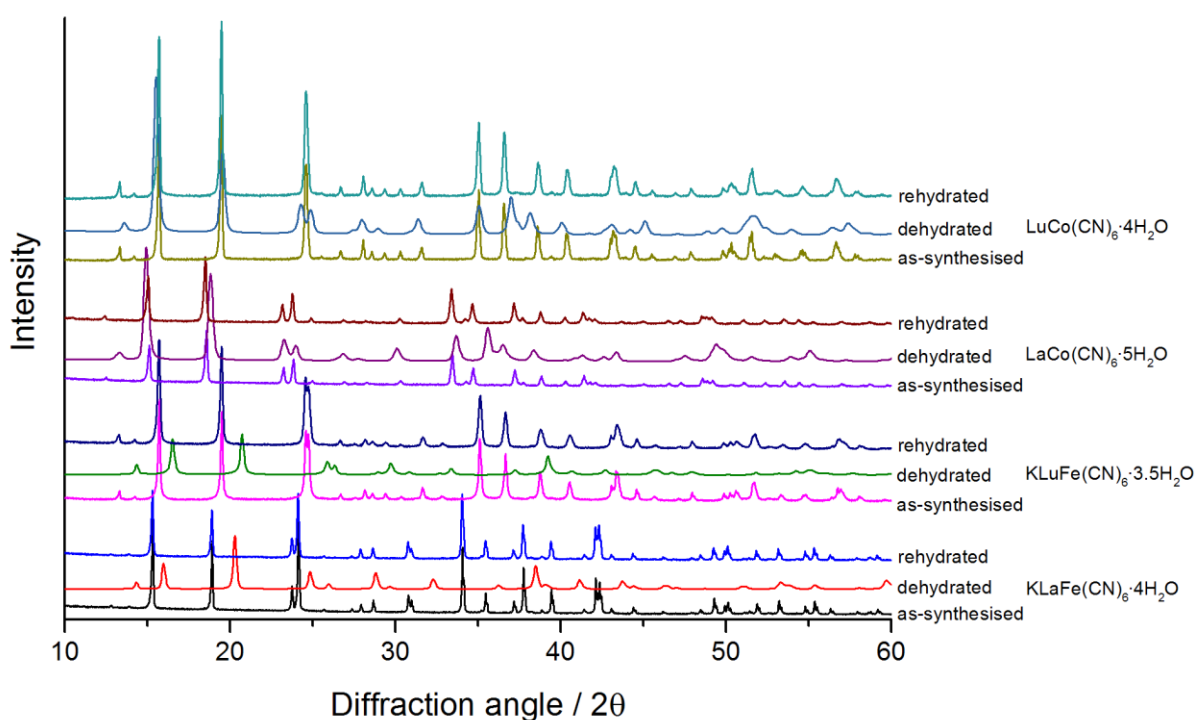


Figure S7 Laboratory XRPD data for $\text{A}_3\text{LnM}(\text{CN})_6 \cdot n\text{H}_2\text{O}$ frameworks, with the close similarity of the as-synthesised and rehydrated patterns demonstrating the reversibility of the structural transformations that occur upon dehydration. Synchrotron data (with 2θ values rescaled to match the $\text{Cu K}\alpha$ wavelength lab data) for the dehydrated materials are shown for comparison. The large shift of the peaks to higher angles upon dehydration of the $\text{KLnFe}(\text{CN})_6 \cdot n\text{H}_2\text{O}$ materials is evident, corresponding to the large decrease in volume.

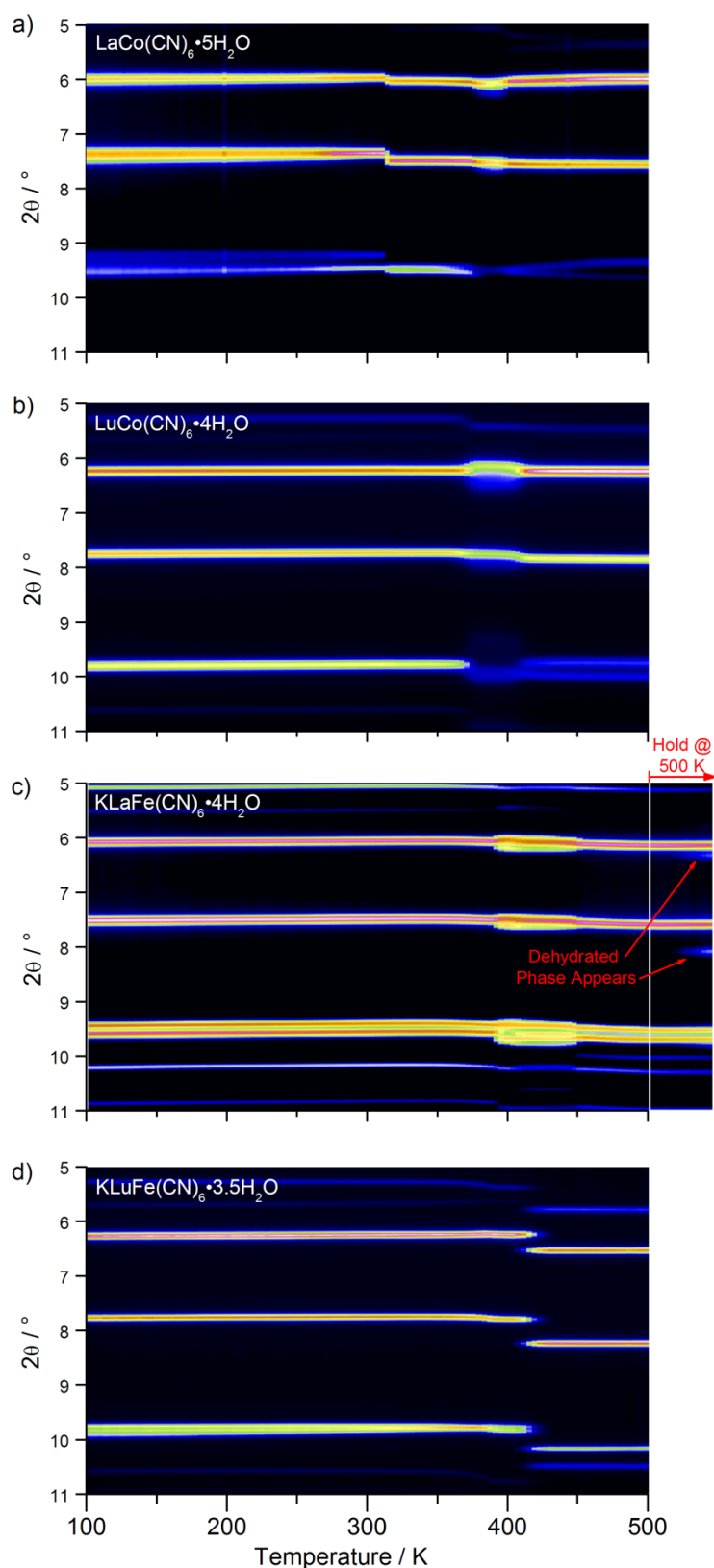


Figure S8 Selected 2θ range of the series of VT-XRPD patterns between 100-500 K for the dehydration of (a) $\text{LaCo(CN)}_6 \cdot 5\text{H}_2\text{O}$ showing two phase changes, (b) $\text{LuCo(CN)}_6 \cdot 4\text{H}_2\text{O}$ showing the symmetry change from orthorhombic to hexagonal via an un-indexed phase or phase mixture between 370-410 K, (c) $\text{KLaFe(CN)}_6 \cdot 4\text{H}_2\text{O}$ including data for temperature hold at 500 K, during which the fully dehydrated phase begins to appear, and (d) $\text{KLuFe(CN)}_6 \cdot 3.5\text{H}_2\text{O}$ with the dehydrated phase appearing in a similar manner at around 400 K. The X-ray wavelength used was 0.61951 Å for (a) & (b) and 0.61832 Å for (c) & (d).

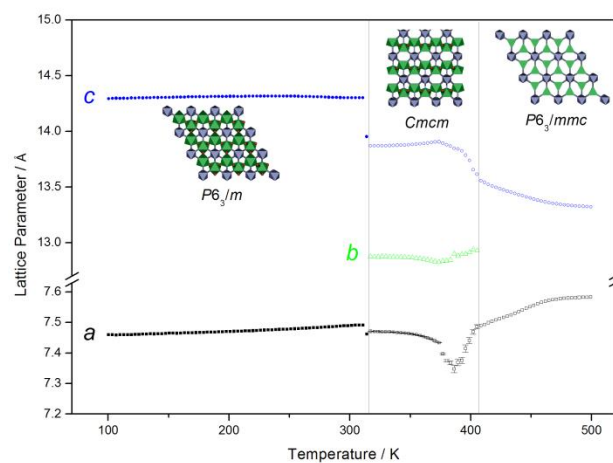


Figure S9 Unit cell a , b , and c parameters vs. temperature for $\text{LaCo(CN)}_6 \cdot n\text{H}_2\text{O}$ during heating, from synchrotron XRPD data.

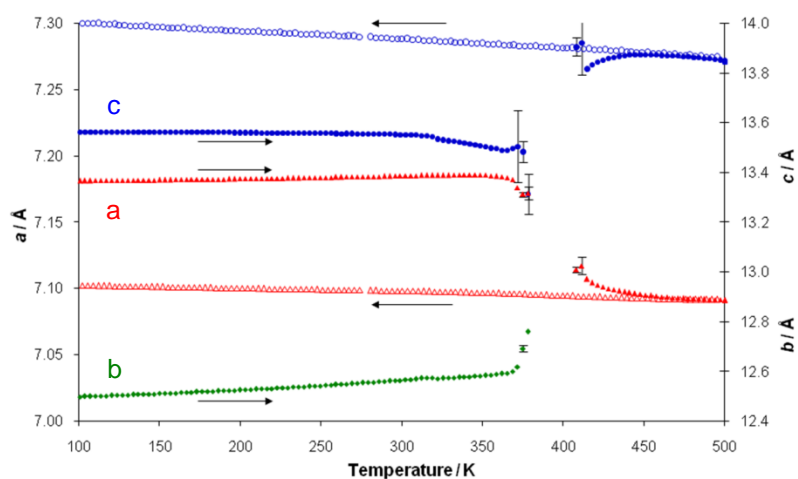


Figure S10 Unit cell a , b , and c parameters vs. temperature for $\text{LuCo(CN)}_6 \cdot n\text{H}_2\text{O}$ from synchrotron XRPD data. Filled symbols represent the hydrated phase ($Cmcm$) during heating; open symbols represent the dehydrated phase ($P6_3/mmc$) during cooling.

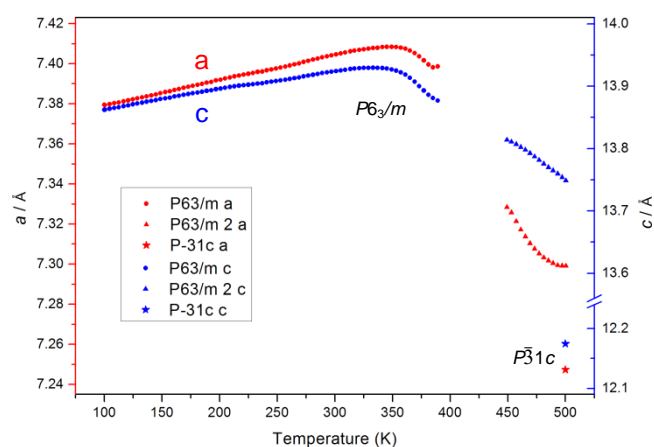


Figure S11 Unit cell parameters vs. temperature for $\text{KLaFe(CN)}_6 \cdot 4\text{H}_2\text{O}$ during thermal dehydration.

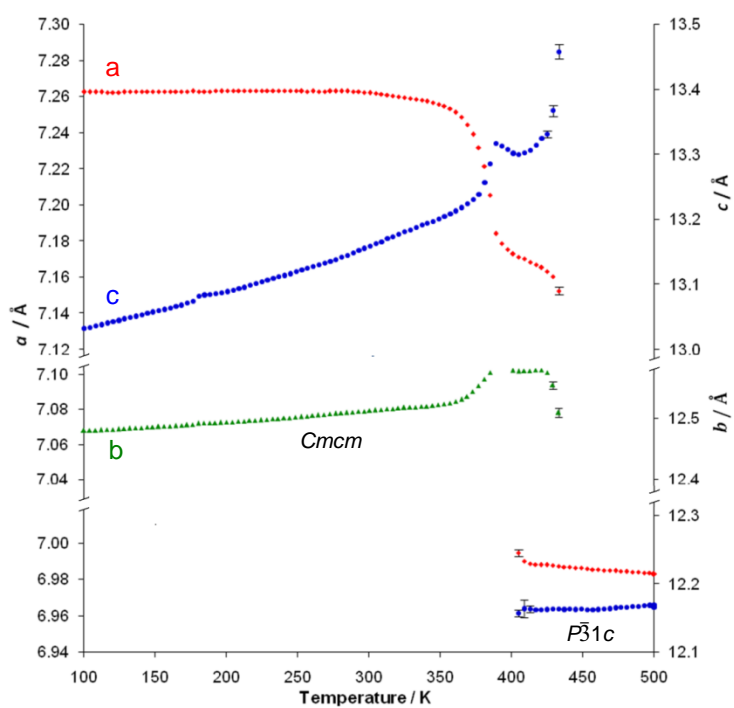


Figure S12 Unit cell a , b , and c parameters vs. temperature for $\text{KLuFe(CN)}_6 \cdot 3.5\text{H}_2\text{O}$ during thermal dehydration.

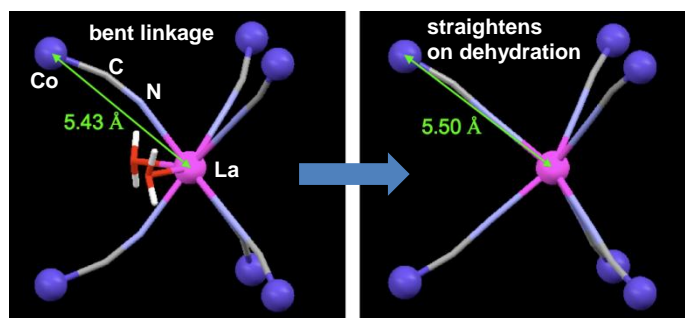


Figure S13 A portion of the structure from the Rietveld refinements for (a) $\text{LaCo(CN)}_6 \cdot 4\text{H}_2\text{O}$ with two coordinated water molecules, and (b) dehydrated LaCo(CN)_6 , highlighting the effect of coordinated water on cyanide bending and Ln-M distance, which may explain in part the slight expansion of the material during the final stage of dehydration.

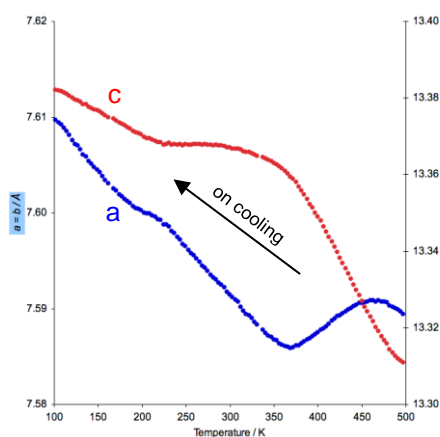


Figure S14 Unit cell a and c parameters for LaCo(CN)_6 on cooling. The non-linearities arise from undesired re-adsorption of residual water vapour into the extremely hygroscopic framework as the temperature is decreased.

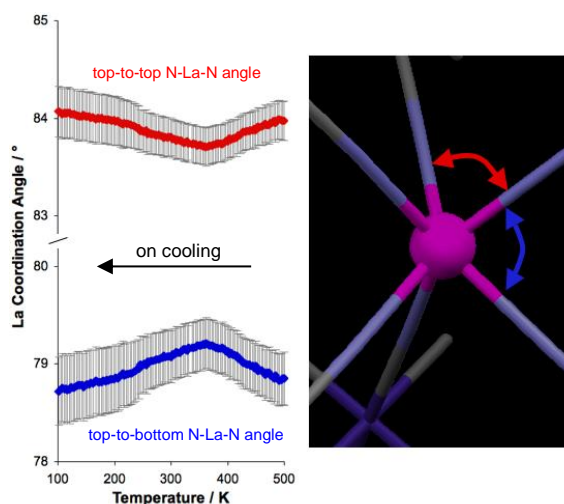


Figure S15 Coordination angles around the LaN_6 unit in LaCo(CN)_6 on cooling, determined by Rietveld refinement against the synchrotron XRPD data. ‘Top-to-top’ (red) and ‘top-to-bottom’ (blue) N-La-N angles are illustrated. The increase in the top-to-bottom angle on cooling from 500 K to 350 K (and concomitant decrease in the top-to-top angle) is a strong indication that water is coordinating at the equatorial coordination site during this period.

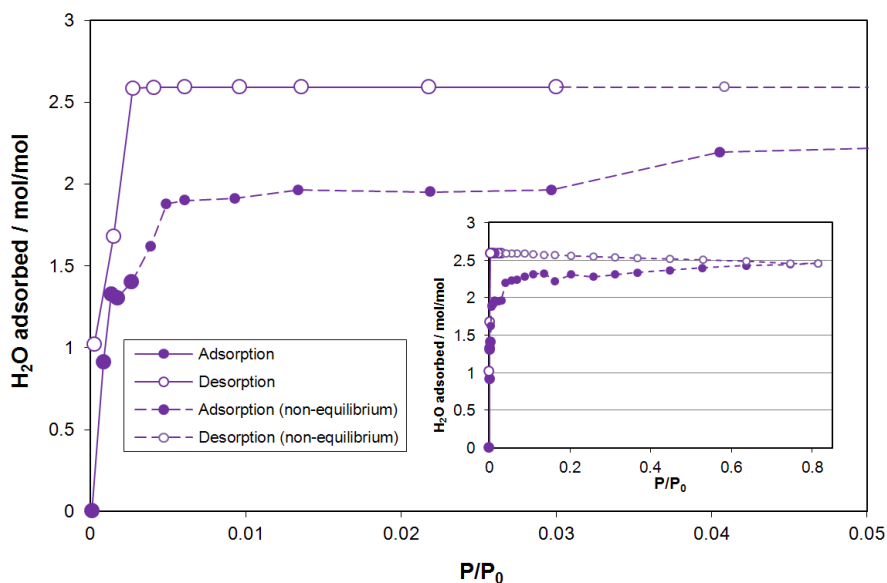


Figure S16 Low pressure portion of the gravimetric water adsorption (filled circles) and desorption (open circles) isotherms for $LuCo(CN)_6$ at 40 °C. The full isotherm is inset. The smaller symbols with dashed lines indicate non-equilibrium points. The kinetics of adsorption are very slow beyond the initial adsorption of the two coordinated water molecules. The sample continued to adsorb water vapour over several days even as the pressure was being decreased during the “desorption” phase of the measurement.

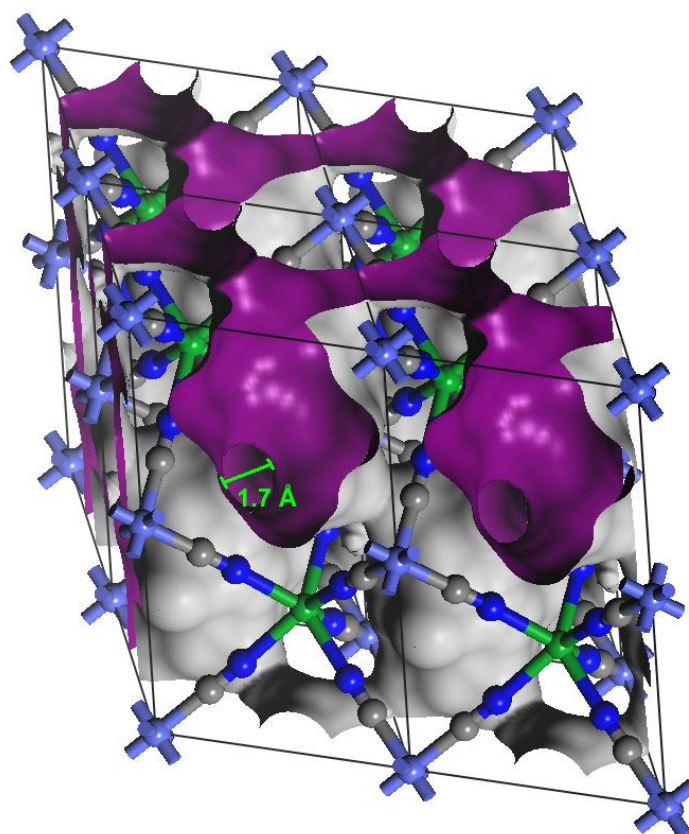


Figure S17 Pore structure in anhydrous $LuCo(CN)_6$, generated in Materials Studio using the Connolly method,¹ with a 1.1 Å probe radius. The narrow circular windows between the larger pore spaces are visible, with a diameter of only ~1.7 Å (or even less if a larger probe radius is used).

[1] M. Connolly, *Science*, 1983, **221**, 709-713.

Table S1 Lattice parameters and weighted profile R-factors from Rietveld refinement using XRPD data for dehydration of $\text{LaCo}(\text{CN})_6 \cdot 5\text{H}_2\text{O}$ (12-BM, APS). No shading denotes refinements in $P6_3/m$. Light shading denotes refinements in $Cmcm$. Dark shading denotes refinements in $P6_3/mmc$.

| T / K | $a / \text{\AA}$ | $b / \text{\AA}$ | $c / \text{\AA}$ | $V / \text{\AA}^3$ | wRp |
|-------|------------------|------------------|------------------|--------------------|--------|
| 100.4 | 7.4596(11) | $b = a$ | 14.293(4) | 688.78(22) | 0.0363 |
| 103.5 | 7.4597(11) | $b = a$ | 14.295(4) | 688.88(22) | 0.0366 |
| 106.6 | 7.4587(13) | $b = a$ | 14.297(4) | 688.83(27) | 0.0429 |
| 109.8 | 7.4593(12) | $b = a$ | 14.296(4) | 688.87(24) | 0.0386 |
| 112.9 | 7.4598(11) | $b = a$ | 14.297(4) | 689.02(22) | 0.0369 |
| 116.1 | 7.4601(11) | $b = a$ | 14.296(4) | 689.04(23) | 0.0370 |
| 119.2 | 7.4601(13) | $b = a$ | 14.300(4) | 689.20(26) | 0.0422 |
| 122.4 | 7.4613(11) | $b = a$ | 14.299(4) | 689.38(23) | 0.0378 |
| 125.5 | 7.4609(12) | $b = a$ | 14.301(4) | 689.42(25) | 0.0412 |
| 128.6 | 7.4619(11) | $b = a$ | 14.300(4) | 689.57(22) | 0.0369 |
| 131.8 | 7.4616(13) | $b = a$ | 14.302(4) | 689.60(26) | 0.0427 |
| 134.9 | 7.4630(11) | $b = a$ | 14.301(3) | 689.78(22) | 0.0365 |
| 138.0 | 7.4624(13) | $b = a$ | 14.304(4) | 689.82(26) | 0.0428 |
| 141.2 | 7.4632(11) | $b = a$ | 14.303(3) | 689.93(22) | 0.0367 |
| 144.3 | 7.4631(12) | $b = a$ | 14.305(4) | 690.02(25) | 0.0422 |
| 147.5 | 7.4639(11) | $b = a$ | 14.305(3) | 690.15(21) | 0.0365 |
| 150.6 | 7.4651(10) | $b = a$ | 14.305(3) | 690.40(21) | 0.0361 |
| 153.8 | 7.4647(10) | $b = a$ | 14.306(3) | 690.35(21) | 0.0359 |
| 156.9 | 7.4644(12) | $b = a$ | 14.307(4) | 690.36(24) | 0.0411 |
| 160.0 | 7.4650(10) | $b = a$ | 14.307(3) | 690.45(21) | 0.0359 |
| 163.2 | 7.4659(10) | $b = a$ | 14.307(3) | 690.64(20) | 0.0358 |
| 166.3 | 7.4656(11) | $b = a$ | 14.310(4) | 690.71(23) | 0.0404 |
| 169.5 | 7.4663(11) | $b = a$ | 14.310(4) | 690.83(22) | 0.0378 |
| 172.6 | 7.4665(11) | $b = a$ | 14.310(4) | 690.91(22) | 0.0380 |
| 175.8 | 7.4669(10) | $b = a$ | 14.311(3) | 691.03(21) | 0.0376 |
| 178.9 | 7.4671(10) | $b = a$ | 14.311(3) | 691.05(20) | 0.0352 |
| 182.0 | 7.4679(10) | $b = a$ | 14.311(3) | 691.18(20) | 0.0348 |
| 185.2 | 7.4682(9) | $b = a$ | 14.312(3) | 691.29(19) | 0.0346 |
| 188.3 | 7.4683(10) | $b = a$ | 14.313(4) | 691.37(22) | 0.0384 |
| 191.5 | 7.4689(9) | $b = a$ | 14.3127(30) | 691.47(19) | 0.0345 |
| 194.6 | 7.4694(9) | $b = a$ | 14.3125(30) | 691.53(19) | 0.0338 |
| 197.7 | 7.4700(9) | $b = a$ | 14.3135(29) | 691.69(18) | 0.0338 |
| 200.9 | 7.4701(9) | $b = a$ | 14.3139(29) | 691.73(18) | 0.0335 |
| 204.0 | 7.4707(9) | $b = a$ | 14.3141(28) | 691.86(18) | 0.0332 |
| 207.2 | 7.4711(8) | $b = a$ | 14.3135(28) | 691.91(17) | 0.0326 |
| 210.4 | 7.4717(8) | $b = a$ | 14.3137(28) | 692.02(17) | 0.0323 |
| 213.5 | 7.4721(8) | $b = a$ | 14.3143(27) | 692.13(17) | 0.0318 |
| 216.7 | 7.4724(8) | $b = a$ | 14.3147(27) | 692.20(17) | 0.0315 |
| 219.8 | 7.4729(8) | $b = a$ | 14.3148(26) | 692.29(16) | 0.0313 |
| 223.0 | 7.4737(8) | $b = a$ | 14.3147(25) | 692.44(16) | 0.0310 |
| 226.1 | 7.4742(7) | $b = a$ | 14.3152(25) | 692.55(15) | 0.0307 |
| 229.2 | 7.4749(7) | $b = a$ | 14.3159(24) | 692.71(15) | 0.0303 |
| 232.4 | 7.4753(7) | $b = a$ | 14.3159(24) | 692.80(15) | 0.0300 |
| 235.5 | 7.4759(7) | $b = a$ | 14.3165(23) | 692.94(14) | 0.0296 |
| 238.6 | 7.4764(7) | $b = a$ | 14.3167(23) | 693.05(14) | 0.0293 |
| 241.8 | 7.4769(6) | $b = a$ | 14.3160(22) | 693.11(13) | 0.0288 |
| 244.9 | 7.4776(6) | $b = a$ | 14.3160(21) | 693.22(13) | 0.0284 |
| 248.0 | 7.4780(6) | $b = a$ | 14.3161(21) | 693.32(13) | 0.0278 |
| 251.2 | 7.4786(6) | $b = a$ | 14.3162(20) | 693.43(12) | 0.0274 |
| 254.3 | 7.4792(5) | $b = a$ | 14.3153(19) | 693.48(12) | 0.0269 |
| 257.4 | 7.4798(5) | $b = a$ | 14.3140(18) | 693.54(11) | 0.0263 |

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|-------|------------|-------------|-------------|-------------|--------|
| 260.6 | 7.4804(5) | $b = a$ | 14.3136(17) | 693.63(10) | 0.0256 |
| 263.7 | 7.4812(4) | $b = a$ | 14.3133(16) | 693.76(10) | 0.0252 |
| 266.9 | 7.4818(4) | $b = a$ | 14.3126(15) | 693.84(9) | 0.0248 |
| 270.0 | 7.4825(4) | $b = a$ | 14.3112(14) | 693.90(8) | 0.0243 |
| 273.1 | 7.4832(35) | $b = a$ | 14.3102(13) | 693.98(8) | 0.0233 |
| 276.3 | 7.4841(32) | $b = a$ | 14.3091(12) | 694.10(7) | 0.0231 |
| 279.4 | 7.4845(29) | $b = a$ | 14.3074(11) | 694.10(7) | 0.0215 |
| 282.6 | 7.4854(26) | $b = a$ | 14.3056(10) | 694.17(6) | 0.0200 |
| 285.8 | 7.4861(23) | $b = a$ | 14.3046(9) | 694.25(5) | 0.0188 |
| 288.9 | 7.4869(21) | $b = a$ | 14.3034(7) | 694.35(4) | 0.0173 |
| 292.1 | 7.4880(18) | $b = a$ | 14.3026(6) | 694.50(4) | 0.0157 |
| 295.2 | 7.4888(16) | $b = a$ | 14.3019(5) | 694.62(3) | 0.0145 |
| 298.3 | 7.4896(14) | $b = a$ | 14.3018(5) | 694.768(30) | 0.0138 |
| 301.4 | 7.4905(13) | $b = a$ | 14.3015(4) | 694.927(27) | 0.0132 |
| 304.6 | 7.4911(13) | $b = a$ | 14.3011(4) | 695.007(26) | 0.0131 |
| 307.7 | 7.4916(12) | $b = a$ | 14.3008(4) | 695.093(25) | 0.0128 |
| 310.8 | 7.4917(12) | $b = a$ | 14.3007(4) | 695.094(24) | 0.0123 |
| 314.0 | 7.4620(15) | $b = a$ | 13.9520(8) | 672.8(4) | 0.0729 |
| 317.1 | 7.4708(7) | 12.8749(11) | 13.8707(6) | 1334.15(18) | 0.0166 |
| 320.3 | 7.4701(6) | 12.8728(10) | 13.8695(5) | 1333.71(15) | 0.0150 |
| 323.4 | 7.4701(5) | 12.8711(9) | 13.8699(5) | 1333.57(14) | 0.0141 |
| 326.6 | 7.4690(6) | 12.8732(11) | 13.8692(6) | 1333.53(17) | 0.0162 |
| 329.7 | 7.4690(6) | 12.8732(11) | 13.8692(6) | 1333.53(17) | 0.0162 |
| 332.9 | 7.4689(6) | 12.8714(10) | 13.8715(5) | 1333.54(15) | 0.0145 |
| 336.0 | 7.4683(6) | 12.8708(10) | 13.8728(6) | 1333.49(16) | 0.0154 |
| 339.2 | 7.4675(6) | 12.8704(11) | 13.8740(6) | 1333.42(17) | 0.0161 |
| 342.3 | 7.4661(6) | 12.8703(11) | 13.8747(5) | 1333.24(16) | 0.0156 |
| 345.4 | 7.4648(7) | 12.8692(11) | 13.8764(6) | 1333.06(17) | 0.0164 |
| 348.6 | 7.4639(7) | 12.8667(11) | 13.8789(6) | 1332.87(18) | 0.0165 |
| 351.7 | 7.4617(7) | 12.8651(12) | 13.8811(6) | 1332.51(19) | 0.0173 |
| 354.8 | 7.4597(7) | 12.8614(12) | 13.8842(6) | 1332.08(19) | 0.0176 |
| 358.0 | 7.4566(7) | 12.8575(13) | 13.8876(6) | 1331.45(20) | 0.0185 |
| 361.2 | 7.4534(8) | 12.8520(13) | 13.8911(7) | 1330.65(20) | 0.0191 |
| 364.3 | 7.4497(8) | 12.8461(14) | 13.8947(7) | 1329.72(22) | 0.0207 |
| 367.4 | 7.4451(9) | 12.8391(15) | 13.8995(8) | 1328.63(23) | 0.0220 |
| 370.6 | 7.4394(10) | 12.8321(17) | 13.9033(8) | 1327.25(27) | 0.0251 |
| 373.7 | 7.4335(11) | 12.8264(18) | 13.9057(9) | 1325.84(28) | 0.0260 |
| 376.9 | 7.3968(21) | 12.834(4) | 13.8926(18) | 1318.9(6) | 0.0403 |
| 380.0 | 7.374(4) | 12.837(7) | 13.878(3) | 1313.6(11) | 0.0480 |
| 383.2 | 7.368(5) | 12.846(8) | 13.867(4) | 1312.5(12) | 0.0468 |
| 386.3 | 7.348(12) | 12.901(20) | 13.846(10) | 1312.5(32) | 0.0732 |
| 389.5 | 7.369(11) | 12.881(21) | 13.841(9) | 1313.7(30) | 0.0700 |
| 392.6 | 7.376(10) | 12.896(15) | 13.823(8) | 1314.8(24) | 0.0618 |
| 395.7 | 7.415(12) | 12.898(22) | 13.786(11) | 1318.4(32) | 0.0944 |
| 398.9 | 7.441(10) | 12.913(18) | 13.737(7) | 1319.9(26) | 0.0753 |
| 402.0 | 7.4782(6) | $b = a$ | 13.5998(11) | 659.70(11) | 0.0276 |
| 405.2 | 7.4835(6) | $b = a$ | 13.5781(11) | 658.54(9) | 0.0273 |
| 408.3 | 7.4889(6) | $b = a$ | 13.5578(10) | 658.50(9) | 0.0255 |
| 411.4 | 7.4939(6) | $b = a$ | 13.5405(11) | 658.54(9) | 0.0261 |
| 414.6 | 7.4990(6) | $b = a$ | 13.5226(10) | 658.56(9) | 0.0236 |
| 417.7 | 7.5034(6) | $b = a$ | 13.5089(10) | 658.66(9) | 0.0233 |
| 420.9 | 7.5078(6) | $b = a$ | 13.4963(10) | 658.82(9) | 0.0230 |
| 424.0 | 7.5121(6) | $b = a$ | 13.4833(10) | 658.94(9) | 0.0227 |
| 427.1 | 7.5165(6) | $b = a$ | 13.4731(10) | 659.22(9) | 0.0230 |
| 430.3 | 7.5206(6) | $b = a$ | 13.4615(10) | 659.37(9) | 0.0221 |

| | | | | | |
|-------|-----------|---------|-------------|------------|--------|
| 433.4 | 7.5249(6) | $b = a$ | 13.4526(10) | 659.69(9) | 0.0227 |
| 436.5 | 7.5299(6) | $b = a$ | 13.4414(10) | 660.02(9) | 0.0217 |
| 439.7 | 7.5351(6) | $b = a$ | 13.4312(10) | 660.42(9) | 0.0216 |
| 442.8 | 7.5403(7) | $b = a$ | 13.4217(13) | 660.87(11) | 0.0271 |
| 445.9 | 7.5460(6) | $b = a$ | 13.4104(10) | 661.31(9) | 0.0214 |
| 449.1 | 7.5513(5) | $b = a$ | 13.4005(10) | 661.75(8) | 0.0212 |
| 452.2 | 7.5565(5) | $b = a$ | 13.3902(10) | 662.15(8) | 0.0212 |
| 455.3 | 7.5613(5) | $b = a$ | 13.3809(10) | 662.54(8) | 0.0210 |
| 458.5 | 7.5656(5) | $b = a$ | 13.3725(10) | 662.88(8) | 0.0213 |
| 461.6 | 7.5692(5) | $b = a$ | 13.3651(10) | 663.13(8) | 0.0212 |
| 464.7 | 7.5718(5) | $b = a$ | 13.3582(10) | 663.25(8) | 0.0208 |
| 467.9 | 7.5742(5) | $b = a$ | 13.3527(9) | 663.40(8) | 0.0208 |
| 471.0 | 7.5762(5) | $b = a$ | 13.3482(10) | 663.52(7) | 0.0209 |
| 474.2 | 7.5778(5) | $b = a$ | 13.3432(9) | 663.55(7) | 0.0208 |
| 477.3 | 7.5788(5) | $b = a$ | 13.3387(9) | 663.51(7) | 0.0208 |
| 480.5 | 7.5799(5) | $b = a$ | 13.3359(10) | 663.57(7) | 0.0212 |
| 483.6 | 7.5806(5) | $b = a$ | 13.3330(10) | 663.54(7) | 0.0213 |
| 486.8 | 7.5815(4) | $b = a$ | 13.3300(9) | 663.54(7) | 0.0210 |
| 489.9 | 7.5820(4) | $b = a$ | 13.3277(9) | 663.51(7) | 0.0212 |
| 493.0 | 7.5824(5) | $b = a$ | 13.3255(11) | 663.48(8) | 0.0228 |
| 496.2 | 7.5827(6) | $b = a$ | 13.3236(13) | 663.44(9) | 0.0254 |
| 499.3 | 7.5833(4) | $b = a$ | 13.3208(10) | 663.40(7) | 0.0216 |

Table S2 Lattice parameters and weighted profile R-factors from Rietveld refinement using XRPD data for dehydration of $\text{LuCo}(\text{CN})_6 \cdot 4\text{H}_2\text{O}$ (12-BM, APS). No shading denotes refinements in $Cmcm$. Light shading denotes unsatisfactory refinements during the phase transition. Dark shading denotes refinements in $P6_3/mmc$.

| T / K | $a / \text{\AA}$ | $b / \text{\AA}$ | $c / \text{\AA}$ | $V / \text{\AA}^3$ | wRp |
|-------|------------------|------------------|------------------|--------------------|--------|
| 100.3 | 7.21762(24) | 12.4973(4) | 13.36567(18) | 1205.60(6) | 0.0223 |
| 103.6 | 7.21767(24) | 12.4981(5) | 13.36596(18) | 1205.70(6) | 0.0225 |
| 106.9 | 7.21768(24) | 12.4988(4) | 13.36611(18) | 1205.78(6) | 0.0223 |
| 110.2 | 7.21772(24) | 12.4997(5) | 13.36648(18) | 1205.92(6) | 0.0225 |
| 113.5 | 7.21771(24) | 12.5005(5) | 13.36667(18) | 1206.01(6) | 0.0226 |
| 116.8 | 7.21774(24) | 12.5012(5) | 13.36681(18) | 1206.10(6) | 0.0226 |
| 120.1 | 7.21768(24) | 12.5018(5) | 13.36681(18) | 1206.14(6) | 0.0226 |
| 123.4 | 7.21782(24) | 12.5030(5) | 13.36738(18) | 1206.33(6) | 0.0227 |
| 126.7 | 7.21770(24) | 12.5038(5) | 13.36745(18) | 1206.39(6) | 0.0226 |
| 130.0 | 7.21781(24) | 12.5048(5) | 13.36791(18) | 1206.55(6) | 0.0227 |
| 133.3 | 7.21783(24) | 12.5056(5) | 13.36818(18) | 1206.66(6) | 0.0228 |
| 136.6 | 7.21773(24) | 12.5063(5) | 13.36817(18) | 1206.70(6) | 0.0227 |
| 139.9 | 7.21770(24) | 12.5071(5) | 13.36837(18) | 1206.80(6) | 0.0227 |
| 143.2 | 7.21771(24) | 12.5079(5) | 13.36855(18) | 1206.89(6) | 0.0226 |
| 146.5 | 7.21768(24) | 12.5088(5) | 13.36876(18) | 1206.99(6) | 0.0226 |
| 149.8 | 7.21774(24) | 12.5099(5) | 13.36922(18) | 1207.15(6) | 0.0227 |
| 153.1 | 7.21770(24) | 12.5108(5) | 13.36947(18) | 1207.25(6) | 0.0226 |
| 156.4 | 7.21772(24) | 12.5117(5) | 13.36971(18) | 1207.37(6) | 0.0226 |
| 159.7 | 7.21773(24) | 12.5126(5) | 13.36994(18) | 1207.47(6) | 0.0226 |
| 163.0 | 7.21768(24) | 12.5136(5) | 13.37021(18) | 1207.58(6) | 0.0225 |
| 166.3 | 7.21769(24) | 12.5145(5) | 13.37049(18) | 1207.70(6) | 0.0225 |
| 169.7 | 7.21777(24) | 12.5156(5) | 13.37098(18) | 1207.86(6) | 0.0226 |
| 173.0 | 7.21765(24) | 12.5164(4) | 13.37108(18) | 1207.93(6) | 0.0225 |
| 176.3 | 7.21763(23) | 12.5174(4) | 13.37137(18) | 1208.05(6) | 0.0222 |
| 179.6 | 7.21764(23) | 12.5184(4) | 13.37162(18) | 1208.17(6) | 0.0223 |
| 182.9 | 7.21766(23) | 12.5196(4) | 13.37213(18) | 1208.33(6) | 0.0223 |
| 186.3 | 7.21762(23) | 12.5205(4) | 13.37244(18) | 1208.44(6) | 0.0222 |
| 189.6 | 7.21754(23) | 12.5214(4) | 13.37256(18) | 1208.53(6) | 0.0221 |
| 192.9 | 7.21754(23) | 12.5223(4) | 13.37288(18) | 1208.64(6) | 0.0220 |
| 196.2 | 7.21750(23) | 12.5233(4) | 13.37309(17) | 1208.76(6) | 0.0218 |
| 199.5 | 7.21751(23) | 12.5245(4) | 13.37355(18) | 1208.92(6) | 0.0219 |
| 202.9 | 7.21749(22) | 12.5256(4) | 13.37391(18) | 1209.05(6) | 0.0218 |
| 206.2 | 7.21745(22) | 12.5267(4) | 13.37429(17) | 1209.18(6) | 0.0217 |
| 209.5 | 7.21739(22) | 12.5278(4) | 13.37456(17) | 1209.30(6) | 0.0216 |
| 212.8 | 7.21733(22) | 12.5286(4) | 13.37471(17) | 1209.39(6) | 0.0215 |
| 216.1 | 7.21726(21) | 12.5298(4) | 13.37506(17) | 1209.52(6) | 0.0213 |
| 219.4 | 7.21725(21) | 12.5309(4) | 13.37538(17) | 1209.65(6) | 0.0213 |
| 222.7 | 7.21728(21) | 12.5321(4) | 13.37584(17) | 1209.82(5) | 0.0213 |
| 226.0 | 7.21723(21) | 12.5332(4) | 13.37620(17) | 1209.95(5) | 0.0210 |
| 229.4 | 7.21722(21) | 12.5344(4) | 13.37663(17) | 1210.10(5) | 0.0211 |
| 232.7 | 7.21715(21) | 12.5356(4) | 13.37690(17) | 1210.23(5) | 0.0210 |
| 236.0 | 7.21703(20) | 12.5365(4) | 13.37707(17) | 1210.31(5) | 0.0208 |
| 239.3 | 7.21696(20) | 12.5377(4) | 13.37743(17) | 1210.45(5) | 0.0207 |
| 242.6 | 7.21700(20) | 12.5391(4) | 13.37796(17) | 1210.63(5) | 0.0207 |
| 245.9 | 7.21695(20) | 12.5403(4) | 13.37835(17) | 1210.78(5) | 0.0206 |
| 249.2 | 7.21689(19) | 12.5417(4) | 13.37878(17) | 1210.94(5) | 0.0205 |
| 252.5 | 7.21686(19) | 12.5429(4) | 13.37915(17) | 1211.08(5) | 0.0204 |
| 255.9 | 7.21685(19) | 12.5441(4) | 13.37958(17) | 1211.24(5) | 0.0203 |
| 259.2 | 7.21683(19) | 12.5456(3) | 13.37998(17) | 1211.41(5) | 0.0201 |
| 262.5 | 7.21667(18) | 12.5467(3) | 13.38018(17) | 1211.52(5) | 0.0200 |
| 265.7 | 7.21675(18) | 12.5484(3) | 13.38087(17) | 1211.75(5) | 0.0200 |

| | | | | | |
|-------|-------------|-------------|--------------|-------------|--------|
| 269.1 | 7.21670(18) | 12.5498(3) | 13.38133(17) | 1211.93(5) | 0.0199 |
| 272.4 | 7.21667(17) | 12.5513(3) | 13.38175(17) | 1212.10(5) | 0.0197 |
| 275.7 | 7.21664(17) | 12.5529(3) | 13.38224(17) | 1212.29(4) | 0.0198 |
| 279.0 | 7.21658(17) | 12.5545(3) | 13.38273(17) | 1212.48(4) | 0.0199 |
| 282.4 | 7.21661(17) | 12.5563(3) | 13.38330(17) | 1212.71(4) | 0.0198 |
| 285.6 | 7.21645(16) | 12.5576(3) | 13.38357(17) | 1212.84(4) | 0.0196 |
| 289.0 | 7.21634(16) | 12.5592(3) | 13.38405(17) | 1213.02(4) | 0.0196 |
| 292.3 | 7.21617(15) | 12.5606(3) | 13.38426(16) | 1213.14(4) | 0.0194 |
| 295.6 | 7.21613(15) | 12.5622(3) | 13.38488(16) | 1213.35(4) | 0.0194 |
| 298.9 | 7.21587(15) | 12.5637(3) | 13.38523(16) | 1213.48(4) | 0.0193 |
| 302.2 | 7.21587(14) | 12.5655(3) | 13.38591(16) | 1213.71(4) | 0.0193 |
| 305.5 | 7.21574(14) | 12.5669(3) | 13.38631(16) | 1213.86(4) | 0.0192 |
| 308.8 | 7.21550(14) | 12.5683(3) | 13.38661(16) | 1213.99(4) | 0.0191 |
| 312.1 | 7.21529(13) | 12.5714(2) | 13.38770(16) | 1214.35(4) | 0.0190 |
| 315.5 | 7.21513(13) | 12.5729(2) | 13.38816(16) | 1214.51(4) | 0.0190 |
| 318.8 | 7.21460(13) | 12.5732(2) | 13.38814(16) | 1214.44(4) | 0.0188 |
| 322.1 | 7.21262(14) | 12.5705(3) | 13.38737(17) | 1213.78(4) | 0.0184 |
| 325.4 | 7.21189(13) | 12.5714(2) | 13.38762(17) | 1213.77(4) | 0.0181 |
| 328.7 | 7.21133(14) | 12.5727(2) | 13.38798(17) | 1213.83(4) | 0.0183 |
| 332.0 | 7.21072(13) | 12.5738(2) | 13.38824(17) | 1213.86(4) | 0.0181 |
| 335.3 | 7.21021(13) | 12.5752(2) | 13.38863(17) | 1213.94(4) | 0.0180 |
| 338.6 | 7.20963(13) | 12.5767(2) | 13.38898(17) | 1214.02(4) | 0.0179 |
| 341.9 | 7.20899(13) | 12.5781(2) | 13.38927(17) | 1214.08(4) | 0.0180 |
| 345.2 | 7.20823(13) | 12.5796(2) | 13.38943(17) | 1214.11(4) | 0.0180 |
| 348.5 | 7.20750(13) | 12.5812(2) | 13.38931(18) | 1214.13(4) | 0.0180 |
| 351.8 | 7.20666(13) | 12.5829(2) | 13.38858(18) | 1214.08(4) | 0.0180 |
| 355.1 | 7.20581(14) | 12.5850(2) | 13.38691(19) | 1213.99(4) | 0.0189 |
| 358.4 | 7.20520(16) | 12.5873(3) | 13.38410(24) | 1213.86(4) | 0.0224 |
| 361.7 | 7.20428(23) | 12.5898(4) | 13.3821(3) | 1213.77(6) | 0.0297 |
| 365.0 | 7.2042(4) | 12.5931(6) | 13.3782(6) | 1213.73(10) | 0.0481 |
| 368.3 | 7.2052(7) | 12.5989(11) | 13.3718(12) | 1213.86(19) | 0.0766 |
| 371.6 | 7.207(27) | 12.617(5) | 13.339(4) | 1212.9(8) | 0.1602 |
| 374.9 | | | | | |
| 378.2 | | | | | |
| 381.6 | | | | | |
| 384.9 | | | | | |
| 388.2 | | | | | |
| 391.5 | | | | | |
| 394.8 | | | | | |
| 398.1 | | | | | |
| 401.4 | | | | | |
| 404.7 | | | | | |
| 408.0 | 7.282(7) | $b = a$ | 13.009(10) | 597.4(9) | 0.1734 |
| 411.3 | 7.285(24) | $b = a$ | 13.024(34) | 599(3) | 0.3257 |
| 414.6 | 7.2655(10) | $b = a$ | 12.9708(21) | 592.96(15) | 0.0897 |
| 417.9 | 7.2685(3) | $b = a$ | 12.9557(7) | 592.75(5) | 0.0414 |
| 421.2 | 7.27070(23) | $b = a$ | 12.9468(5) | 592.72(4) | 0.0333 |
| 424.5 | 7.27225(19) | $b = a$ | 12.9394(4) | 592.627(30) | 0.0297 |
| 427.8 | 7.27346(18) | $b = a$ | 12.9331(4) | 592.537(28) | 0.0279 |
| 431.1 | 7.27431(17) | $b = a$ | 12.9279(4) | 592.437(26) | 0.0269 |
| 434.4 | 7.27508(16) | $b = a$ | 12.9233(4) | 592.353(25) | 0.0262 |
| 437.7 | 7.27543(16) | $b = a$ | 12.9189(4) | 592.207(25) | 0.0258 |
| 441.0 | 7.27586(15) | $b = a$ | 12.9155(4) | 592.119(24) | 0.0254 |
| 444.3 | 7.27609(15) | $b = a$ | 12.9122(4) | 592.006(24) | 0.0252 |
| 447.6 | 7.27633(15) | $b = a$ | 12.9095(4) | 591.922(24) | 0.0251 |

| | | | | | |
|-------|-------------|---------|------------|-------------|--------|
| 451.0 | 7.27613(15) | $b = a$ | 12.9064(4) | 591.747(24) | 0.0250 |
| 454.3 | 7.27621(15) | $b = a$ | 12.9042(4) | 591.662(24) | 0.0250 |
| 457.6 | 7.27611(15) | $b = a$ | 12.9021(4) | 591.550(24) | 0.0249 |
| 460.9 | 7.27584(14) | $b = a$ | 12.8999(4) | 591.402(23) | 0.0247 |
| 464.2 | 7.27563(14) | $b = a$ | 12.8980(4) | 591.282(23) | 0.0245 |
| 467.5 | 7.27551(14) | $b = a$ | 12.8967(4) | 591.204(23) | 0.0245 |
| 470.8 | 7.27525(14) | $b = a$ | 12.8954(4) | 591.101(23) | 0.0243 |
| 474.1 | 7.27496(14) | $b = a$ | 12.8941(4) | 590.992(23) | 0.0241 |
| 477.4 | 7.27462(14) | $b = a$ | 12.8928(4) | 590.877(23) | 0.0240 |
| 480.7 | 7.27425(14) | $b = a$ | 12.8916(4) | 590.762(23) | 0.0239 |
| 484.0 | 7.27388(14) | $b = a$ | 12.8906(3) | 590.659(23) | 0.0237 |
| 487.3 | 7.27352(14) | $b = a$ | 12.8898(3) | 590.564(22) | 0.0235 |
| 490.6 | 7.27315(14) | $b = a$ | 12.8889(3) | 590.459(22) | 0.0233 |
| 493.9 | 7.27261(14) | $b = a$ | 12.8878(3) | 590.325(22) | 0.0232 |
| 497.2 | 7.27234(14) | $b = a$ | 12.8873(3) | 590.257(22) | 0.0230 |
| 500.6 | 7.27202(14) | $b = a$ | 12.8868(3) | 590.182(22) | 0.0229 |
| 500.0 | 7.27168(14) | $b = a$ | 12.8862(3) | 590.099(22) | 0.0227 |
| 500.0 | 7.27150(13) | $b = a$ | 12.8859(3) | 590.054(22) | 0.0226 |

Table S3 Lattice parameters and weighted profile R-factors from Rietveld refinement using XRPD data for dehydration of $\text{KLaFe}(\text{CN})_6 \cdot 4\text{H}_2\text{O}$ (1-BM, APS). Light shading denotes unsatisfactory refinements during a phase transition.

| <i>P6₃/m</i> hydrated phase | | | | |
|---|--------------|--------------|--------------------|--------|
| T / K | <i>a</i> / Å | <i>c</i> / Å | V / Å ³ | wRp |
| 100.0 | 7.37949(4) | 13.86231(14) | 653.761(8) | 0.0585 |
| 100.4 | 7.37939(4) | 13.86234(14) | 653.744(8) | 0.0587 |
| 104.6 | 7.37989(4) | 13.86380(13) | 653.902(8) | 0.0583 |
| 108.6 | 7.38028(4) | 13.86510(13) | 654.033(8) | 0.0584 |
| 112.7 | 7.38061(4) | 13.86630(13) | 654.148(8) | 0.0583 |
| 116.7 | 7.38119(4) | 13.86791(13) | 654.326(8) | 0.0580 |
| 120.7 | 7.38166(4) | 13.86934(13) | 654.476(8) | 0.0579 |
| 124.7 | 7.38226(4) | 13.87100(13) | 654.663(8) | 0.0578 |
| 128.7 | 7.38272(4) | 13.87230(13) | 654.805(8) | 0.0580 |
| 132.7 | 7.38316(4) | 13.87363(13) | 654.945(8) | 0.0578 |
| 136.8 | 7.38366(4) | 13.87502(13) | 655.100(8) | 0.0573 |
| 140.7 | 7.38413(4) | 13.87633(13) | 655.246(8) | 0.0572 |
| 144.8 | 7.38464(4) | 13.87770(13) | 655.400(8) | 0.0572 |
| 148.8 | 7.38529(4) | 13.87931(13) | 655.593(8) | 0.0572 |
| 152.8 | 7.38580(4) | 13.88063(13) | 655.744(8) | 0.0571 |
| 156.8 | 7.38617(4) | 13.88171(13) | 655.862(8) | 0.0569 |
| 160.8 | 7.38686(4) | 13.88336(13) | 656.062(8) | 0.0571 |
| 164.8 | 7.38733(4) | 13.88455(13) | 656.201(8) | 0.0569 |
| 168.8 | 7.38797(4) | 13.88609(13) | 656.389(8) | 0.0573 |
| 172.8 | 7.38847(4) | 13.88735(13) | 656.536(8) | 0.0570 |
| 176.8 | 7.38896(4) | 13.88860(13) | 656.684(8) | 0.0572 |
| 180.8 | 7.38947(4) | 13.88983(13) | 656.833(8) | 0.0577 |
| 184.8 | 7.38989(4) | 13.89101(13) | 656.961(8) | 0.0564 |
| 188.8 | 7.39054(4) | 13.89255(13) | 657.151(8) | 0.0568 |
| 192.8 | 7.39088(4) | 13.89348(13) | 657.254(8) | 0.0563 |
| 196.8 | 7.39160(4) | 13.89512(13) | 657.460(8) | 0.0566 |
| 200.8 | 7.39201(4) | 13.89615(13) | 657.582(8) | 0.0562 |
| 204.8 | 7.39265(4) | 13.89756(13) | 657.764(8) | 0.0565 |
| 208.9 | 7.39315(4) | 13.89866(13) | 657.904(8) | 0.0564 |
| 212.9 | 7.39365(4) | 13.89979(13) | 658.047(8) | 0.0564 |
| 216.9 | 7.39408(4) | 13.90071(13) | 658.167(8) | 0.0561 |
| 220.9 | 7.39452(4) | 13.90162(13) | 658.288(8) | 0.0561 |
| 224.9 | 7.39493(4) | 13.90241(13) | 658.399(8) | 0.0558 |
| 228.9 | 7.39538(4) | 13.90324(13) | 658.518(8) | 0.0557 |
| 232.9 | 7.39589(4) | 13.90420(13) | 658.654(8) | 0.0563 |
| 236.9 | 7.39611(4) | 13.90471(13) | 658.718(8) | 0.0552 |
| 240.9 | 7.39672(4) | 13.90599(13) | 658.887(8) | 0.0559 |
| 244.9 | 7.39716(4) | 13.90701(13) | 659.013(8) | 0.0554 |
| 248.9 | 7.39762(4) | 13.90813(13) | 659.150(8) | 0.0554 |
| 252.9 | 7.39809(4) | 13.90926(13) | 659.286(8) | 0.0548 |
| 256.9 | 7.39859(4) | 13.91043(13) | 659.431(8) | 0.0547 |
| 260.9 | 7.39911(4) | 13.91165(13) | 659.581(8) | 0.0546 |
| 264.9 | 7.39968(4) | 13.91296(13) | 659.746(8) | 0.0545 |
| 269.0 | 7.40017(4) | 13.91410(13) | 659.886(8) | 0.0536 |
| 272.9 | 7.40090(4) | 13.91573(13) | 660.094(8) | 0.0548 |
| 276.9 | 7.40148(4) | 13.91705(13) | 660.260(8) | 0.0551 |
| 281.0 | 7.40202(4) | 13.91835(13) | 660.418(8) | 0.0548 |
| 285.0 | 7.40259(4) | 13.91966(13) | 660.581(8) | 0.0552 |
| 289.0 | 7.40316(4) | 13.92099(13) | 660.748(8) | 0.0553 |
| 293.0 | 7.40371(4) | 13.92227(13) | 660.906(8) | 0.0559 |

| | | | | |
|-------|-------------|--------------|-------------|--------|
| 297.0 | 7.40417(4) | 13.92338(13) | 661.040(8) | 0.0562 |
| 301.0 | 7.40464(4) | 13.92443(13) | 661.174(8) | 0.0560 |
| 305.0 | 7.40511(4) | 13.92546(13) | 661.308(8) | 0.0561 |
| 309.0 | 7.40557(4) | 13.92645(14) | 661.437(9) | 0.0565 |
| 313.5 | 7.40613(4) | 13.92762(14) | 661.591(9) | 0.0567 |
| 317.1 | 7.40659(5) | 13.92845(14) | 661.713(9) | 0.0577 |
| 321.1 | 7.40687(5) | 13.92887(14) | 661.784(9) | 0.0580 |
| 325.1 | 7.40721(5) | 13.92929(14) | 661.863(9) | 0.0578 |
| 329.1 | 7.40750(5) | 13.92953(14) | 661.928(9) | 0.0583 |
| 333.2 | 7.40781(5) | 13.92966(14) | 661.990(9) | 0.0585 |
| 337.1 | 7.40793(5) | 13.92925(14) | 661.991(9) | 0.0578 |
| 341.2 | 7.40828(5) | 13.92909(14) | 662.045(9) | 0.0585 |
| 345.2 | 7.40838(5) | 13.92823(15) | 662.024(9) | 0.0586 |
| 349.2 | 7.40840(5) | 13.92691(15) | 661.964(9) | 0.0588 |
| 353.1 | 7.40828(5) | 13.92495(15) | 661.849(9) | 0.0589 |
| 357.2 | 7.40802(5) | 13.92229(15) | 661.676(9) | 0.0591 |
| 361.2 | 7.40750(5) | 13.91850(15) | 661.403(9) | 0.0590 |
| 365.2 | 7.40659(5) | 13.91339(15) | 660.997(10) | 0.0596 |
| 369.2 | 7.40530(5) | 13.90720(16) | 660.474(10) | 0.0606 |
| 373.2 | 7.40361(5) | 13.90017(16) | 659.839(10) | 0.0624 |
| 377.2 | 7.40168(6) | 13.89305(17) | 659.156(11) | 0.0645 |
| 381.2 | 7.39961(6) | 13.88617(18) | 658.463(11) | 0.0667 |
| 385.2 | 7.39814(6) | 13.88110(20) | 657.960(12) | 0.0708 |
| 389.2 | 7.39867(17) | 13.8770(6) | 657.86(4) | 0.1568 |

393.2
401.2
409.2
417.2
425.2
433.2
441.2

| | | | | |
|-------|------------|--------------|-------------|--------|
| 449.2 | 7.32838(8) | 13.81403(26) | 642.491(16) | 0.0637 |
| 453.2 | 7.32572(6) | 13.81096(20) | 641.882(12) | 0.0561 |
| 457.2 | 7.32141(6) | 13.80714(20) | 640.950(12) | 0.0563 |
| 461.2 | 7.31720(6) | 13.80259(20) | 640.001(12) | 0.0563 |
| 465.2 | 7.31375(6) | 13.79792(20) | 639.181(12) | 0.0562 |
| 469.2 | 7.31042(6) | 13.79275(20) | 638.361(12) | 0.0562 |
| 473.2 | 7.30774(6) | 13.78727(20) | 637.639(12) | 0.0561 |
| 477.2 | 7.30527(6) | 13.78163(20) | 636.949(12) | 0.0559 |
| 481.2 | 7.30329(6) | 13.77581(20) | 636.334(12) | 0.0560 |
| 485.3 | 7.30174(6) | 13.77014(20) | 635.802(12) | 0.0555 |
| 489.2 | 7.30045(6) | 13.76478(20) | 635.330(12) | 0.0555 |
| 493.2 | 7.29946(6) | 13.75971(20) | 634.922(12) | 0.0551 |
| 497.1 | 7.29917(6) | 13.75413(20) | 634.616(12) | 0.0546 |
| 500.3 | 7.29914(6) | 13.74874(20) | 634.361(12) | 0.0546 |
| 500.2 | 7.29848(6) | 13.74522(19) | 634.085(12) | 0.0536 |
| 500.0 | 7.29859(6) | 13.74352(19) | 634.026(12) | 0.0527 |
| 500.0 | 7.29876(6) | 13.74320(19) | 634.041(12) | 0.0519 |
| 500.0 | 7.29920(6) | 13.74327(18) | 634.120(11) | 0.0486 |
| 500.0 | 7.29958(6) | 13.74367(18) | 634.204(11) | 0.0468 |
| 500.0 | 7.30019(6) | 13.74479(18) | 634.362(11) | 0.0457 |
| 500.0 | 7.30031(6) | 13.74513(18) | 634.399(11) | 0.0446 |
| 500.0 | 7.30082(6) | 13.74596(18) | 634.525(11) | 0.0435 |
| 500.0 | 7.30082(6) | 13.74635(18) | 634.543(11) | 0.0421 |
| 500.0 | 7.30102(6) | 13.74712(19) | 634.613(11) | 0.0420 |

***P3̄1c* dehydrated phase**

| <i>a</i> / Å | <i>c</i> / Å | <i>V</i> / Å ³ | wRp |
|--------------|--------------|---------------------------|--------|
| 7.2789(20) | 12.103(7) | 555.3(4) | 0.0486 |
| 7.2722(16) | 12.107(6) | 554.47(31) | 0.0468 |
| 7.2711(13) | 12.113(5) | 554.61(27) | 0.0457 |
| 7.2615(12) | 12.136(5) | 554.17(25) | 0.0446 |
| 7.2578(10) | 12.146(4) | 554.09(21) | 0.0435 |
| 7.2524(9) | 12.1613(32) | 553.95(18) | 0.0421 |
| 7.2474(9) | 12.1748(28) | 553.80(16) | 0.0420 |

Table S4 Lattice parameters and weighted profile R-factors from Rietveld refinement using XRPD data for dehydration of $\text{KLuFe}(\text{CN})_6 \cdot 3.5\text{H}_2\text{O}$ (1-BM, APS).

| <i>Cmcm</i> hydrated phase | | | | | |
|-----------------------------------|-------------|--------------|--------------|--------------------|--------|
| T / K | a / Å | b / Å | c / Å | V / Å ³ | wRp |
| 100.0 | 7.13181(16) | 12.47974(25) | 13.3958(3) | 1192.27(4) | 0.0590 |
| 100.1 | 7.13184(16) | 12.47981(26) | 13.3961(3) | 1192.30(4) | 0.0594 |
| 104.2 | 7.13236(16) | 12.48001(25) | 13.3959(3) | 1192.40(4) | 0.0590 |
| 108.3 | 7.13325(18) | 12.48059(29) | 13.3959(3) | 1192.60(5) | 0.0673 |
| 112.3 | 7.13387(16) | 12.48089(25) | 13.3958(3) | 1192.72(4) | 0.0588 |
| 116.3 | 7.13481(17) | 12.48150(28) | 13.3957(3) | 1192.93(5) | 0.0659 |
| 120.3 | 7.13541(16) | 12.48180(25) | 13.3957(3) | 1193.06(4) | 0.0586 |
| 124.3 | 7.13623(16) | 12.48228(25) | 13.3956(3) | 1193.23(4) | 0.0584 |
| 128.3 | 7.13714(15) | 12.48303(25) | 13.3960(3) | 1193.49(4) | 0.0585 |
| 132.3 | 7.13773(16) | 12.48357(25) | 13.3963(3) | 1193.67(4) | 0.0583 |
| 136.3 | 7.13852(18) | 12.48406(28) | 13.3964(3) | 1193.85(5) | 0.0666 |
| 140.3 | 7.13923(16) | 12.48449(25) | 13.39642(29) | 1194.02(4) | 0.0582 |
| 144.3 | 7.14011(15) | 12.48513(25) | 13.39636(29) | 1194.22(4) | 0.0577 |
| 148.3 | 7.14088(17) | 12.48563(28) | 13.3965(3) | 1194.41(5) | 0.0644 |
| 152.4 | 7.14153(15) | 12.48613(25) | 13.39656(29) | 1194.57(4) | 0.0572 |
| 156.3 | 7.14232(16) | 12.48672(25) | 13.39674(29) | 1194.78(4) | 0.0576 |
| 160.3 | 7.14309(16) | 12.48720(25) | 13.39684(29) | 1194.96(4) | 0.0576 |
| 164.4 | 7.14387(16) | 12.48758(25) | 13.39674(29) | 1195.12(4) | 0.0572 |
| 168.4 | 7.14466(16) | 12.48829(25) | 13.39695(29) | 1195.34(4) | 0.0572 |
| 172.4 | 7.14567(16) | 12.48889(25) | 13.39672(29) | 1195.54(4) | 0.0569 |
| 176.4 | 7.14668(15) | 12.48971(25) | 13.39704(28) | 1195.82(4) | 0.0566 |
| 180.4 | 7.14945(15) | 12.49169(25) | 13.39679(28) | 1196.45(4) | 0.0596 |
| 184.4 | 7.15033(17) | 12.49233(27) | 13.39684(32) | 1196.66(5) | 0.0625 |
| 188.4 | 7.15041(15) | 12.49228(24) | 13.39692(28) | 1196.68(4) | 0.0565 |
| 192.4 | 7.15085(18) | 12.49275(29) | 13.3975(3) | 1196.85(5) | 0.0658 |
| 196.5 | 7.15137(16) | 12.49298(24) | 13.39726(28) | 1196.94(4) | 0.0563 |
| 200.5 | 7.15218(16) | 12.49367(25) | 13.39771(28) | 1197.18(4) | 0.0564 |
| 204.5 | 7.15278(16) | 12.49387(24) | 13.39738(28) | 1197.27(4) | 0.0559 |
| 208.5 | 7.15386(15) | 12.49466(24) | 13.39748(28) | 1197.53(4) | 0.0558 |
| 212.5 | 7.15455(15) | 12.49515(24) | 13.39743(27) | 1197.69(4) | 0.0549 |
| 216.5 | 7.15561(17) | 12.49599(27) | 13.3978(3) | 1197.99(5) | 0.0617 |
| 220.5 | 7.15648(15) | 12.49667(24) | 13.39795(28) | 1198.21(4) | 0.0549 |
| 224.6 | 7.15745(15) | 12.49712(24) | 13.39762(28) | 1198.38(4) | 0.0550 |
| 228.6 | 7.15840(15) | 12.49792(24) | 13.39790(28) | 1198.64(4) | 0.0548 |
| 232.6 | 7.15932(15) | 12.49866(24) | 13.39788(27) | 1198.87(4) | 0.0544 |
| 236.6 | 7.16020(16) | 12.49908(24) | 13.39757(28) | 1199.03(4) | 0.0550 |
| 240.6 | 7.16109(15) | 12.49990(24) | 13.39763(27) | 1199.26(4) | 0.0540 |
| 244.6 | 7.16206(16) | 12.50051(24) | 13.39739(27) | 1199.46(4) | 0.0542 |
| 248.7 | 7.16305(16) | 12.50150(24) | 13.39744(27) | 1199.72(4) | 0.0542 |
| 252.7 | 7.16409(15) | 12.50233(24) | 13.39710(27) | 1199.95(4) | 0.0539 |
| 256.7 | 7.16499(16) | 12.50316(25) | 13.39700(28) | 1200.17(4) | 0.0545 |
| 260.7 | 7.16585(15) | 12.50414(24) | 13.39704(27) | 1200.41(4) | 0.0533 |
| 264.7 | 7.16679(15) | 12.50494(24) | 13.39680(27) | 1200.63(4) | 0.0531 |
| 268.7 | 7.16775(16) | 12.50575(24) | 13.39686(27) | 1200.87(4) | 0.0538 |
| 272.7 | 7.16874(27) | 12.50660(40) | 13.3972(5) | 1201.15(7) | 0.0909 |
| 276.7 | 7.16990(15) | 12.50760(24) | 13.39706(27) | 1201.43(4) | 0.0526 |
| 280.7 | 7.17103(15) | 12.50840(24) | 13.39709(27) | 1201.69(4) | 0.0525 |
| 284.7 | 7.17229(16) | 12.50926(24) | 13.39707(27) | 1201.98(4) | 0.0528 |
| 288.7 | 7.17357(15) | 12.50995(24) | 13.39663(27) | 1202.23(4) | 0.0524 |
| 292.7 | 7.17499(16) | 12.51106(24) | 13.39639(27) | 1202.55(4) | 0.0529 |
| 296.7 | 7.17609(16) | 12.51160(24) | 13.39538(26) | 1202.70(4) | 0.0524 |

| | | | | | | | | | |
|-------|-------------|--------------|--------------|-------------|--------|-------------------------------------|--------------|--------------------|--------|
| 300.6 | 7.17727(16) | 12.51230(24) | 13.39459(26) | 1202.89(4) | 0.0521 | | | | |
| 304.6 | 7.17857(16) | 12.51302(24) | 13.39362(26) | 1203.09(4) | 0.0518 | | | | |
| 308.6 | 7.17979(16) | 12.51369(25) | 13.39252(27) | 1203.26(4) | 0.0517 | | | | |
| 312.7 | 7.18146(16) | 12.51474(25) | 13.39108(26) | 1203.51(4) | 0.0511 | | | | |
| 316.7 | 7.18250(40) | 12.5154(6) | 13.38990(60) | 1203.64(10) | 0.1163 | | | | |
| 320.7 | 7.18390(16) | 12.51626(25) | 13.38900(26) | 1203.88(4) | 0.0504 | | | | |
| 324.8 | 7.18513(21) | 12.5170(3) | 13.3878(4) | 1204.05(6) | 0.0655 | | | | |
| 328.9 | 7.18624(18) | 12.51753(28) | 13.3862(3) | 1204.14(5) | 0.0555 | | | | |
| 332.9 | 7.18746(27) | 12.5181(4) | 13.3848(5) | 1204.27(7) | 0.0811 | | | | |
| 337.0 | 7.18887(25) | 12.5194(4) | 13.3834(4) | 1204.51(7) | 0.0746 | | | | |
| 340.8 | 7.18986(17) | 12.51967(27) | 13.38149(27) | 1204.53(5) | 0.0485 | | | | |
| 344.8 | 7.19107(17) | 12.52070(27) | 13.37954(26) | 1204.66(4) | 0.0476 | | | | |
| 348.8 | 7.19232(17) | 12.52174(27) | 13.37710(26) | 1204.75(5) | 0.0471 | | | | |
| 352.8 | 7.19359(18) | 12.52307(27) | 13.37415(26) | 1204.82(5) | 0.0465 | | | | |
| 356.8 | 7.19509(18) | 12.52494(28) | 13.37026(27) | 1204.90(5) | 0.0463 | | | | |
| 360.9 | 7.19673(19) | 12.52729(30) | 13.36465(27) | 1204.90(5) | 0.0459 | | | | |
| 364.9 | 7.19866(20) | 12.5307(3) | 13.35699(29) | 1204.85(5) | 0.0460 | | | | |
| 368.9 | 7.20089(22) | 12.5356(3) | 13.3459(3) | 1204.70(6) | 0.0459 | | | | |
| 372.9 | 7.20323(23) | 12.5430(4) | 13.3305(3) | 1204.42(6) | 0.0457 | | | | |
| 376.9 | 7.20602(25) | 12.5527(4) | 13.3104(4) | 1203.99(7) | 0.0460 | | | | |
| 380.9 | 7.21233(33) | 12.5634(5) | 13.2815(4) | 1203.45(8) | 0.0469 | | | | |
| 384.9 | 7.2227(4) | 12.5740(6) | 13.2369(4) | 1202.15(10) | 0.0466 | | | | |
| 388.9 | 7.23406(25) | 12.5835(4) | 13.17814(26) | 1199.60(6) | 0.0408 | | | | |
| 392.9 | 7.23277(24) | 12.5822(4) | 13.16257(25) | 1197.85(6) | 0.0420 | | | | |
| 396.9 | 7.23082(24) | 12.5805(4) | 13.15356(25) | 1196.54(6) | 0.0433 | | | | |
| 401.0 | 7.22866(25) | 12.5780(4) | 13.14659(26) | 1195.31(6) | 0.0439 | <i>P</i>31c dehydrated phase | | | |
| 405.0 | 7.22788(25) | 12.5765(4) | 13.14192(26) | 1194.62(6) | 0.0430 | <i>a</i> / Å | <i>c</i> / Å | V / Å ³ | wRp |
| 409.0 | 7.22880(26) | 12.5768(4) | 13.13910(26) | 1194.54(6) | 0.0395 | 6.9615(18) | 12.246(5) | 513.95(29) | 0.0430 |
| 413.0 | 7.23032(29) | 12.5768(5) | 13.13426(27) | 1194.36(7) | 0.0363 | 6.9640(50) | 12.2334(13) | 513.80(7) | 0.0395 |
| 417.0 | 7.2333(4) | 12.5782(7) | 13.1301(4) | 1194.60(10) | 0.0362 | 6.9638(18) | 12.2297(5) | 513.623(29) | 0.0363 |
| 421.0 | 7.2368(7) | 12.5787(12) | 13.1257(6) | 1194.82(18) | 0.0382 | 6.9634(10) | 12.22858(28) | 513.511(16) | 0.0362 |
| 425.0 | 7.2393(18) | 12.575(3) | 13.1195(11) | 1194.3(4) | 0.0425 | 6.96327(7) | 12.22814(21) | 513.472(12) | 0.0382 |
| 429.0 | 7.252(3) | 12.554(6) | 13.1125(22) | 1193.8(8) | 0.0477 | 6.96361(7) | 12.22789(20) | 513.512(11) | 0.0425 |
| 433.0 | 7.285(4) | 12.509(7) | 13.090(6) | 1192.8(11) | 0.0462 | 6.96388(7) | 12.22709(21) | 513.520(11) | 0.0477 |
| 437.0 | | | | | | 6.96390(6) | 12.22628(19) | 513.488(10) | 0.0462 |
| 441.0 | | | | | | 6.96357(6) | 12.22522(19) | 513.394(10) | 0.0468 |
| 445.0 | | | | | | 6.96369(6) | 12.22480(19) | 513.395(10) | 0.0462 |
| 449.0 | | | | | | 6.96363(6) | 12.22402(19) | 513.353(10) | 0.0459 |
| 453.0 | | | | | | 6.96374(6) | 12.22329(19) | 513.338(10) | 0.0458 |
| 457.0 | | | | | | 6.96350(6) | 12.22218(18) | 513.257(10) | 0.0445 |
| 461.0 | | | | | | 6.96344(6) | 12.22143(18) | 513.215(10) | 0.0442 |
| 465.0 | | | | | | 6.96364(6) | 12.22088(18) | 513.222(10) | 0.0440 |
| 469.0 | | | | | | 6.96388(6) | 12.22033(18) | 513.235(10) | 0.0440 |
| 473.0 | | | | | | 6.96409(6) | 12.21980(18) | 513.243(10) | 0.0438 |
| 476.6 | | | | | | 6.96447(6) | 12.21950(18) | 513.287(10) | 0.0443 |
| 480.8 | | | | | | 6.96461(6) | 12.21877(18) | 513.277(10) | 0.0436 |
| 485.0 | | | | | | 6.96489(6) | 12.21824(18) | 513.295(10) | 0.0433 |
| 489.1 | | | | | | 6.96512(6) | 12.21768(18) | 513.306(9) | 0.0430 |
| 493.1 | | | | | | 6.96538(6) | 12.21729(18) | 513.329(9) | 0.0430 |
| 497.0 | | | | | | 6.96561(6) | 12.21675(18) | 513.339(9) | 0.0429 |
| 500.7 | | | | | | 6.96585(6) | 12.21621(18) | 513.353(9) | 0.0425 |
| 500.1 | | | | | | 6.96612(6) | 12.21574(18) | 513.373(9) | 0.0423 |
| 500.0 | | | | | | 6.96611(6) | 12.21553(18) | 513.362(9) | 0.0423 |
| 500.0 | | | | | | 6.96616(6) | 12.21556(18) | 513.371(10) | 0.0427 |