Supplementary Information

Hydro-ionothermal syntheses, crystal structures, and properties of five new divalent metal iminophosphonates

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Table S1.Result of the Rietveld refinement of 4.

molecular formula	$Zn_3[NH_2(CH_2PO_3)_2]_2$
formula weight	600.21
crystal system	orthorhombic
a, Å	10.6881(2)
b, Å	13.3129(2)
c, Å	5.4266(2)
a, deg	90.00
b, deg	90.00
g, deg	90.00
V, Å3	772.14
space group	P 2_12_12
Z	2
D_{calc}, g cm^{-3}	2.59
q range, deg	8.0 - 57.0
T (K)	298(2)
l, Å	1.542
Chebychev background polynomial order	5
R_{exp} (%)	8.700
R_{wp} (%)	15.044
R_p (%)	11.824

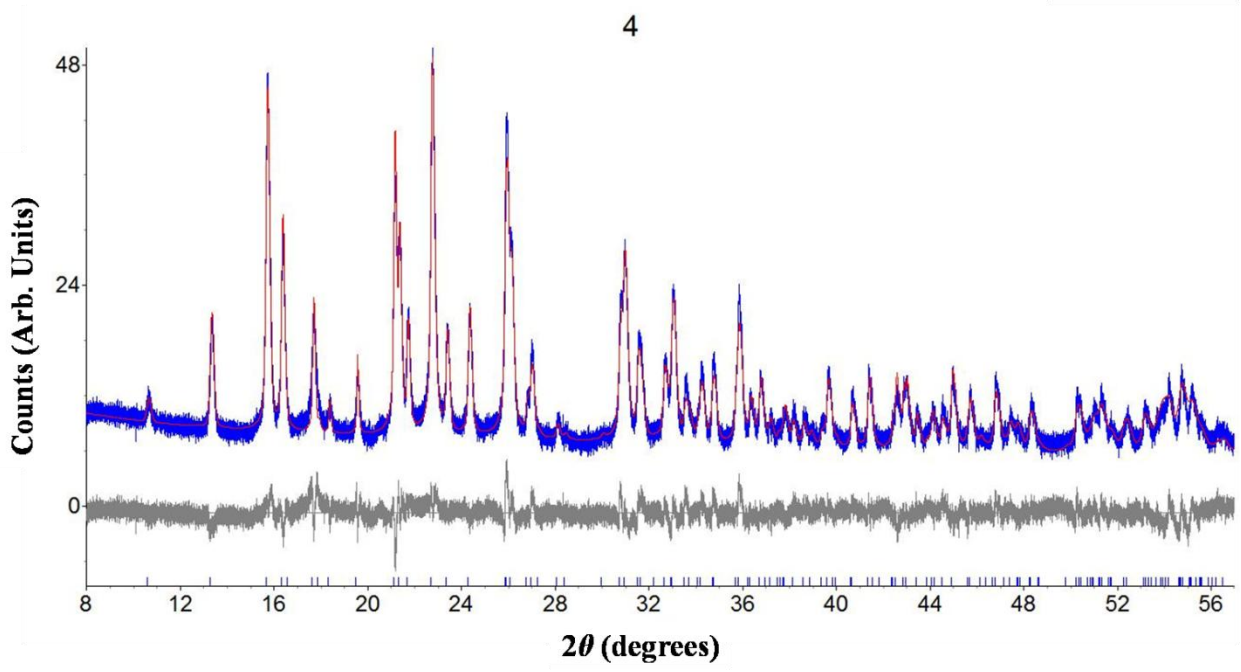

Figure S1 Rietveld plot for 4 of experimental (blue) calculated (red) and difference (gray).

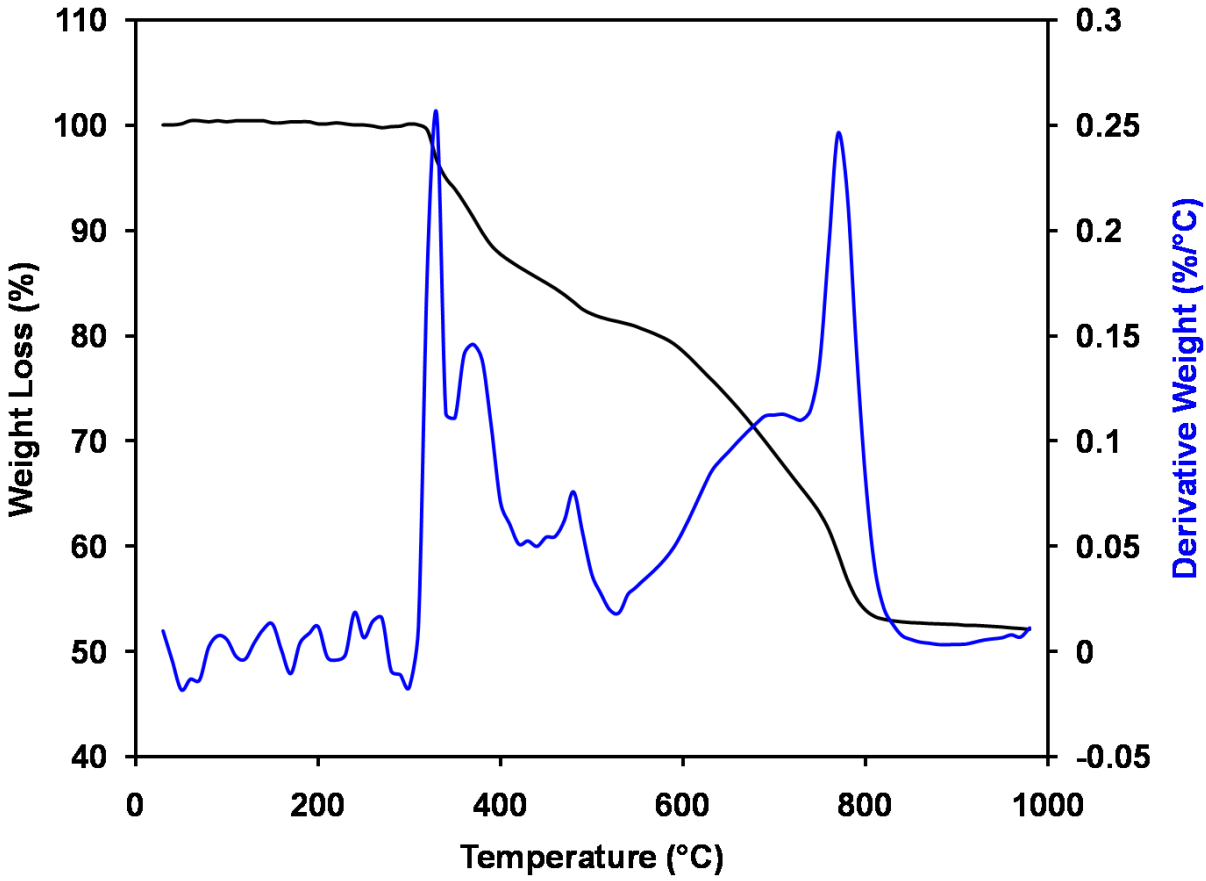

Figure S2. TGA of 1.

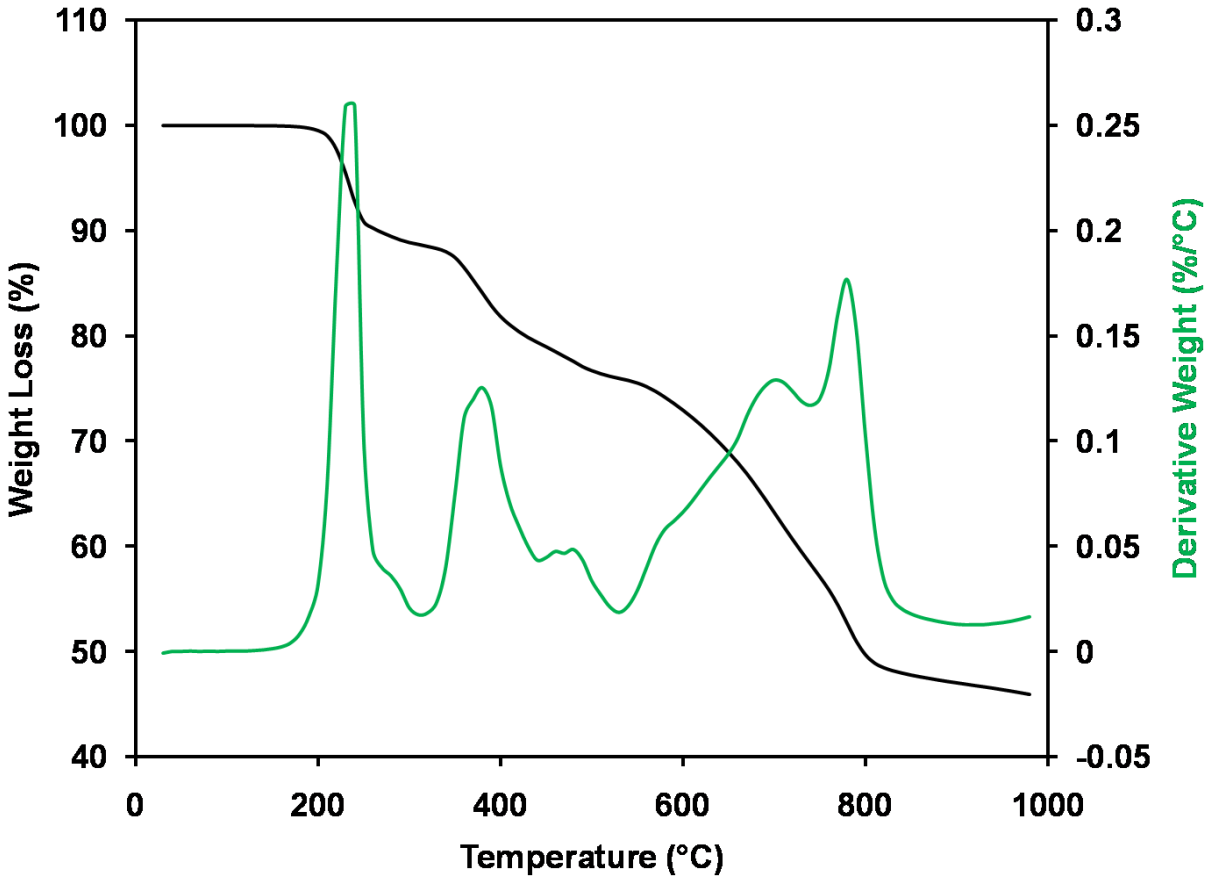

Figure S3. TGA of 2.

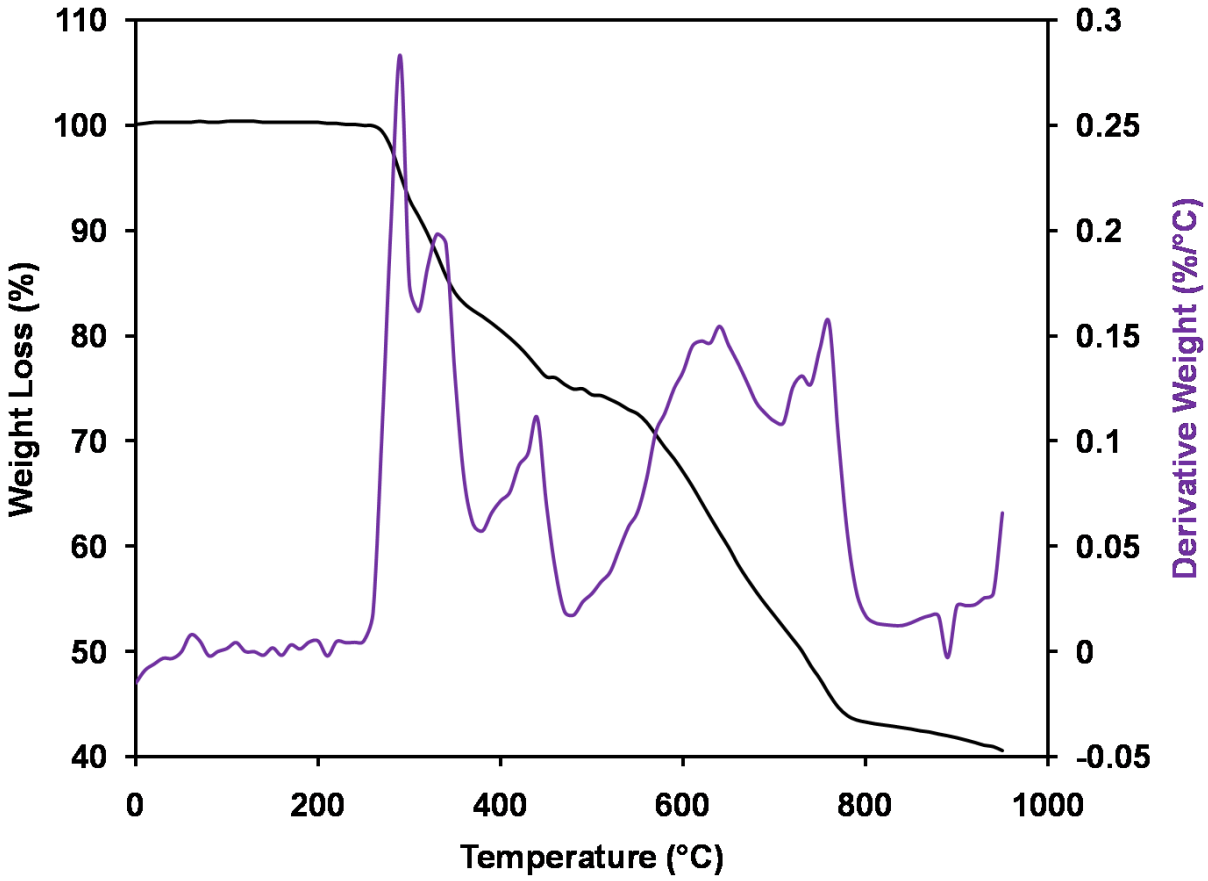

Figure S4. TGA of 3.

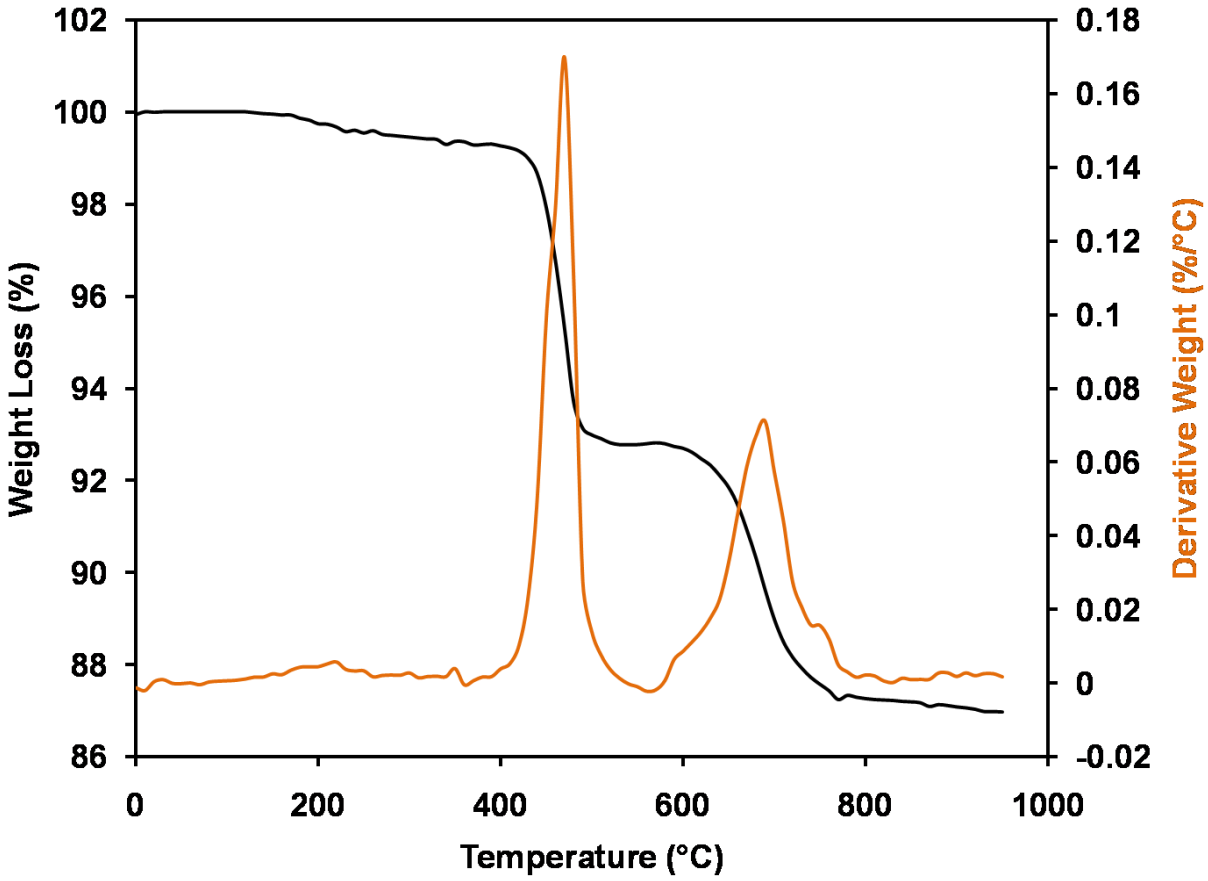

Figure S5. TGA of 4.

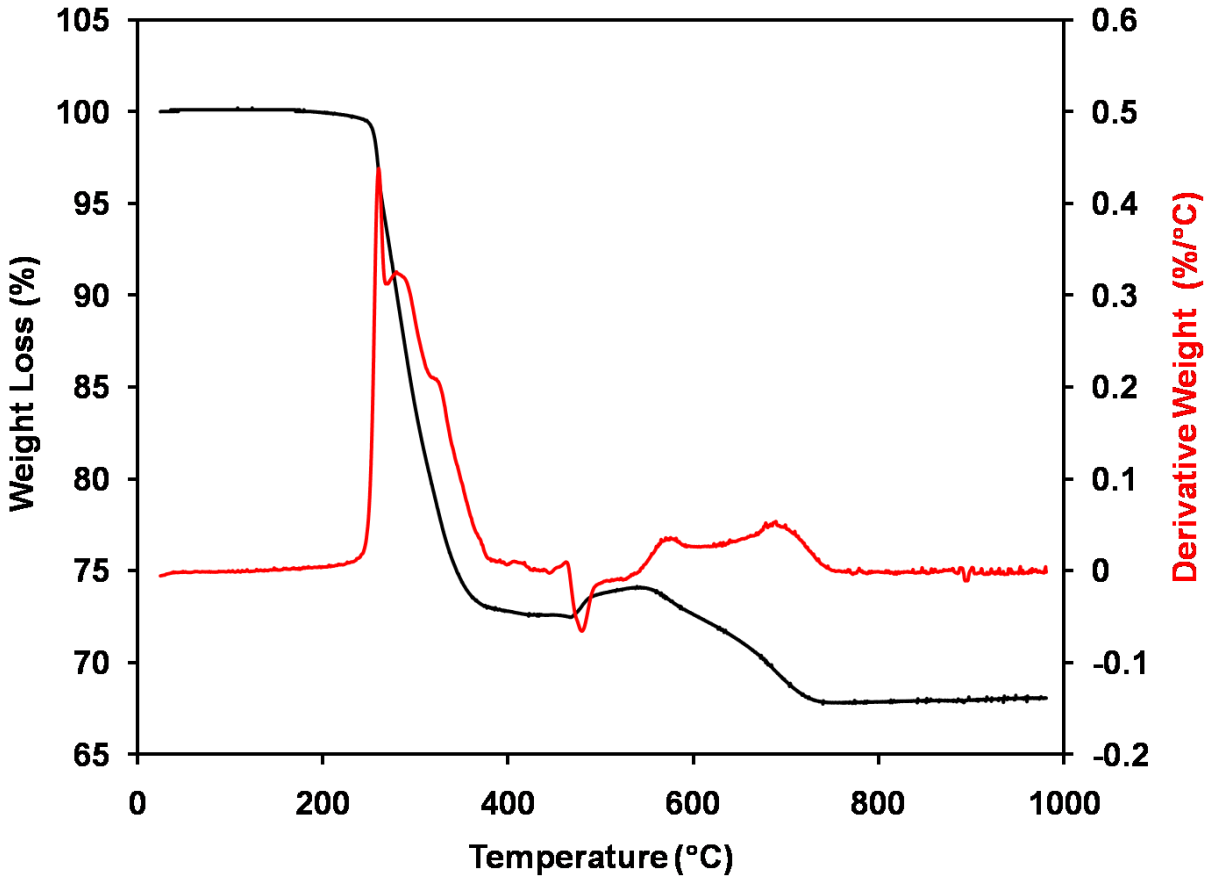

Figure S6. TGA of 5.

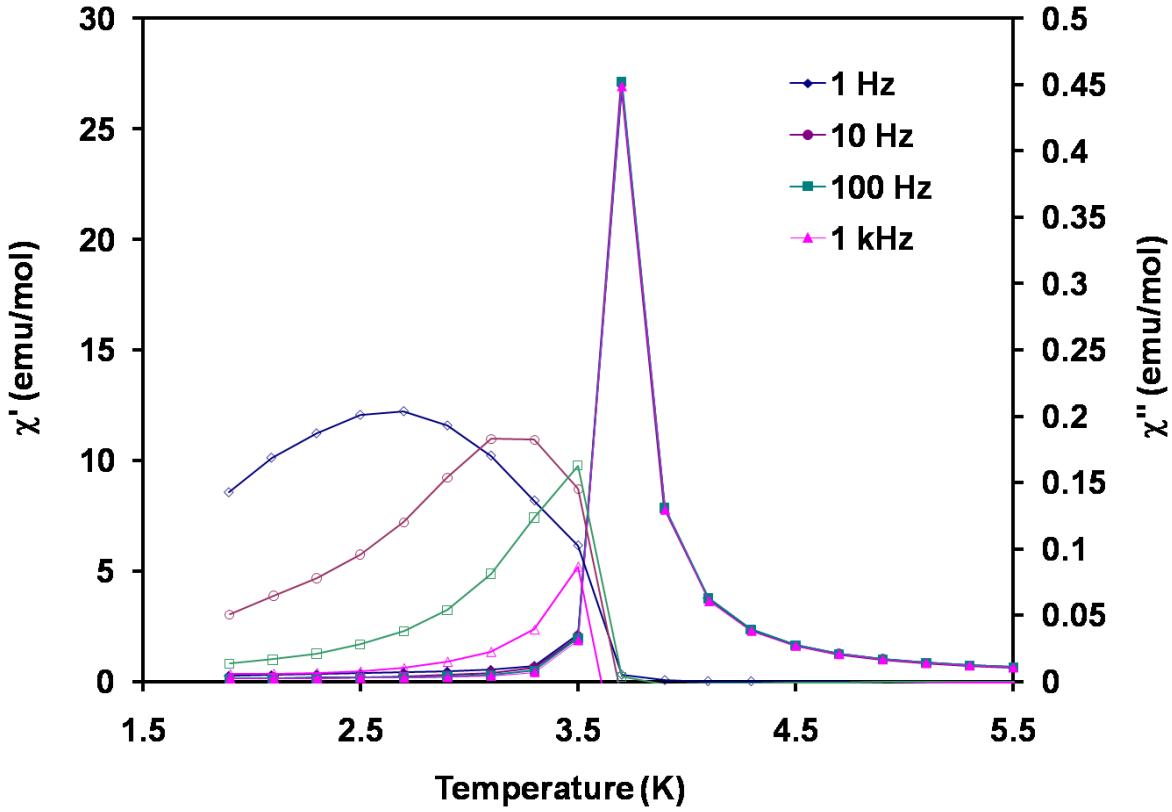

Figure S7. Temperature dependences of the real χ' (full symbols) and imaginary χ'' (open symbols) components of the AC magnetic susceptibility for 1 measured in an oscillating field of 5 Oe at different frequencies.

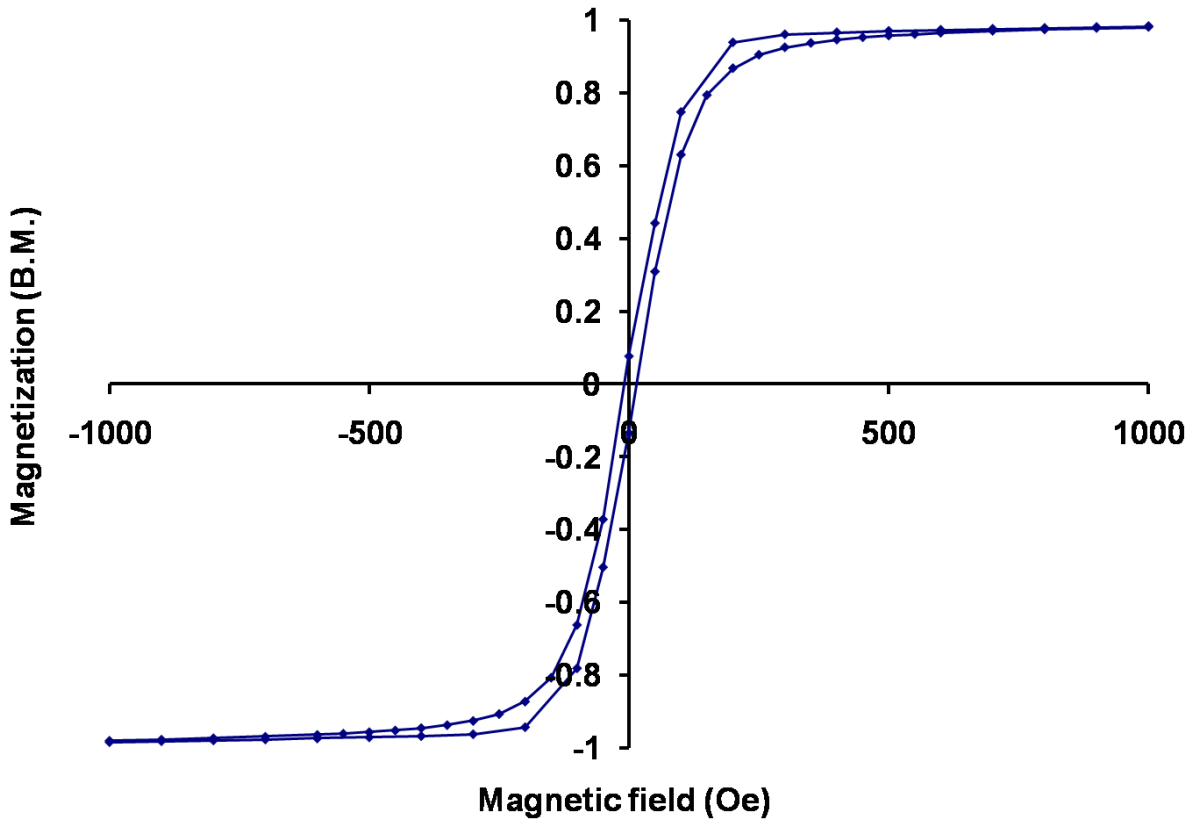

Figure S8. Hysteresis loop for 1 at 1.8 K.

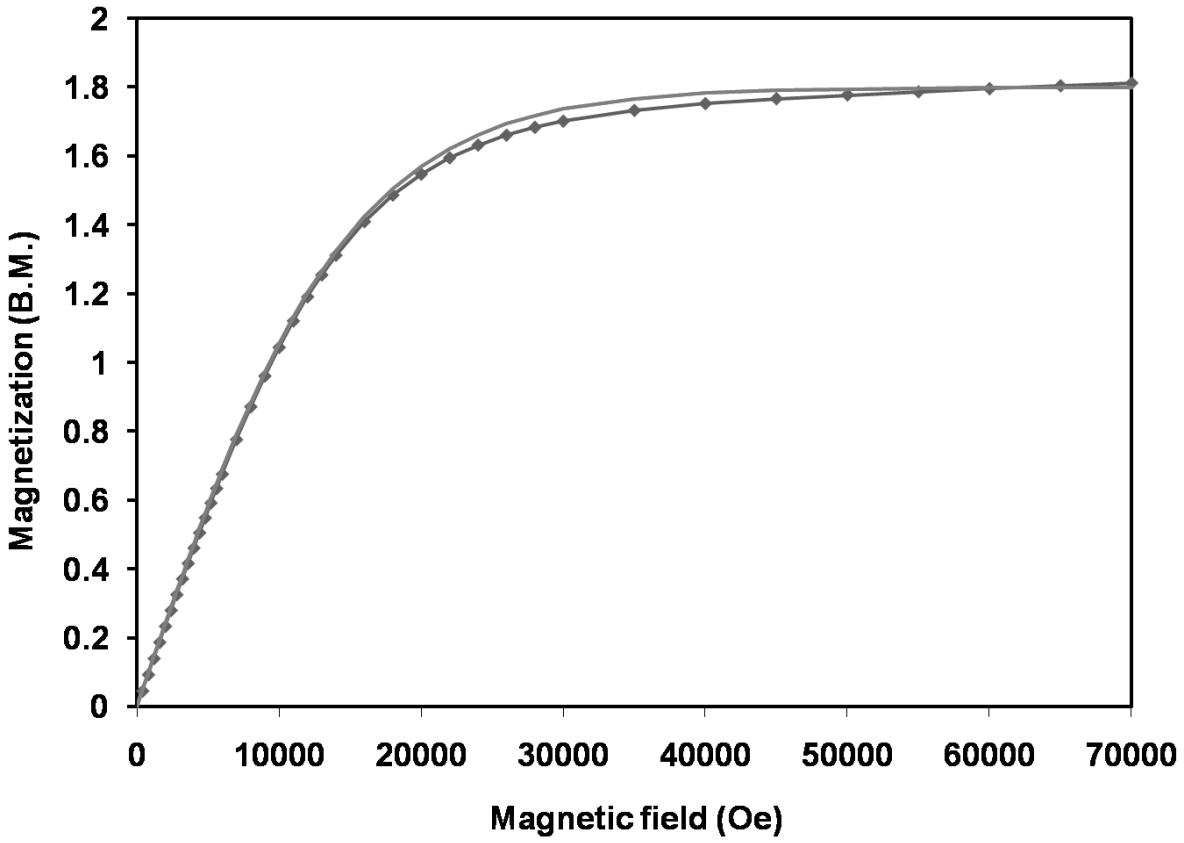

Figure S9. The field dependence of magnetization for 2. The solid line corresponds to the best fit to the Brillouin function.

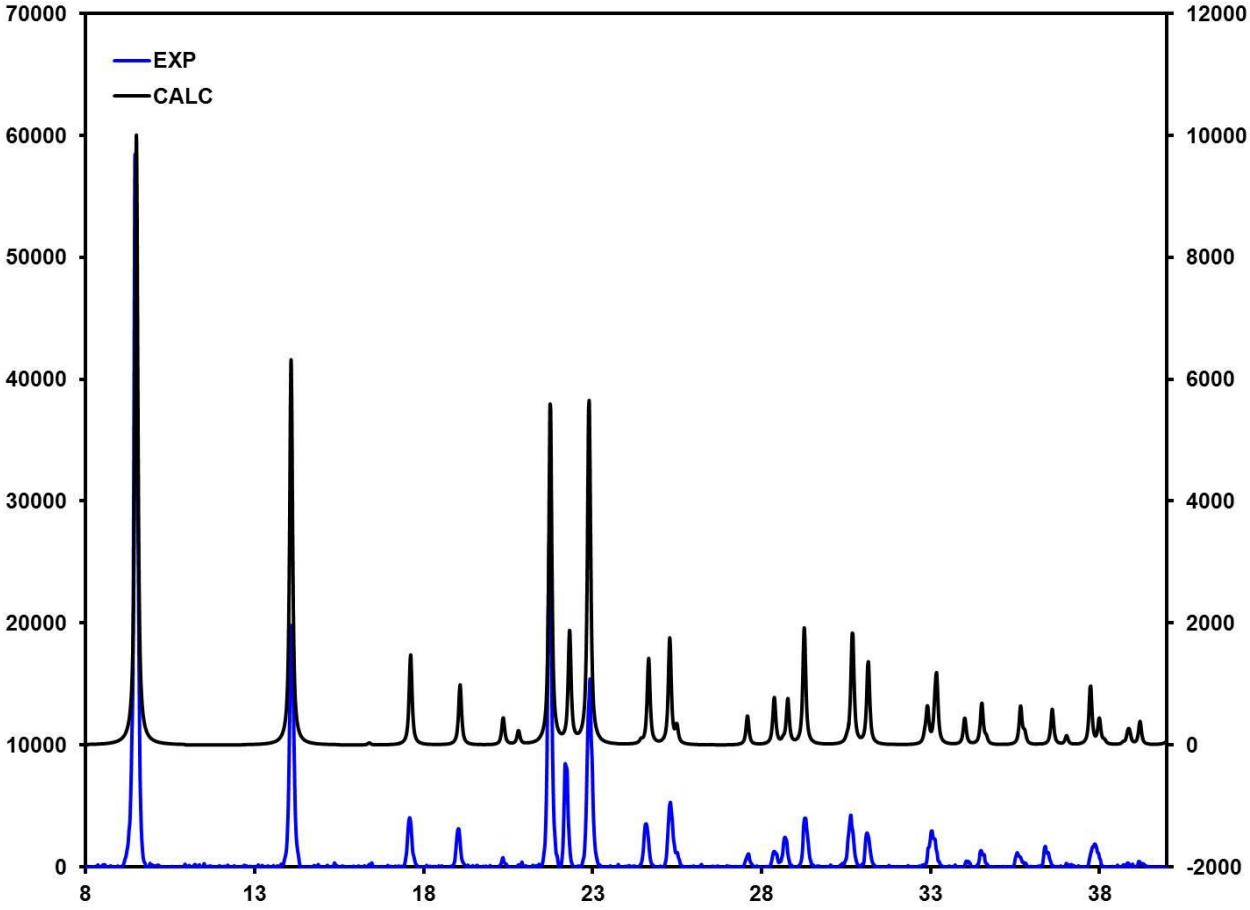

Figure S10. PXRD of 1.

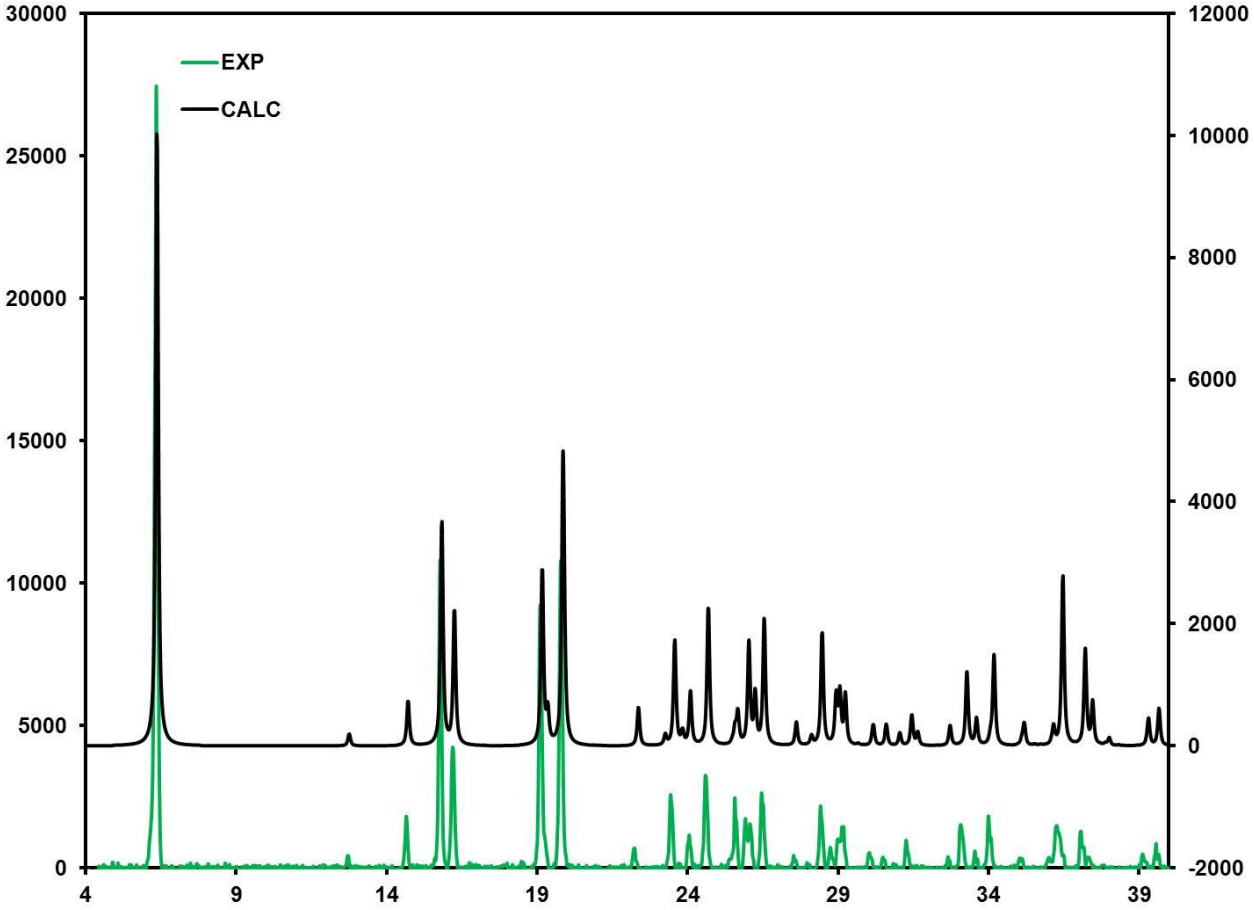

Figure S11. PXRD of 2.

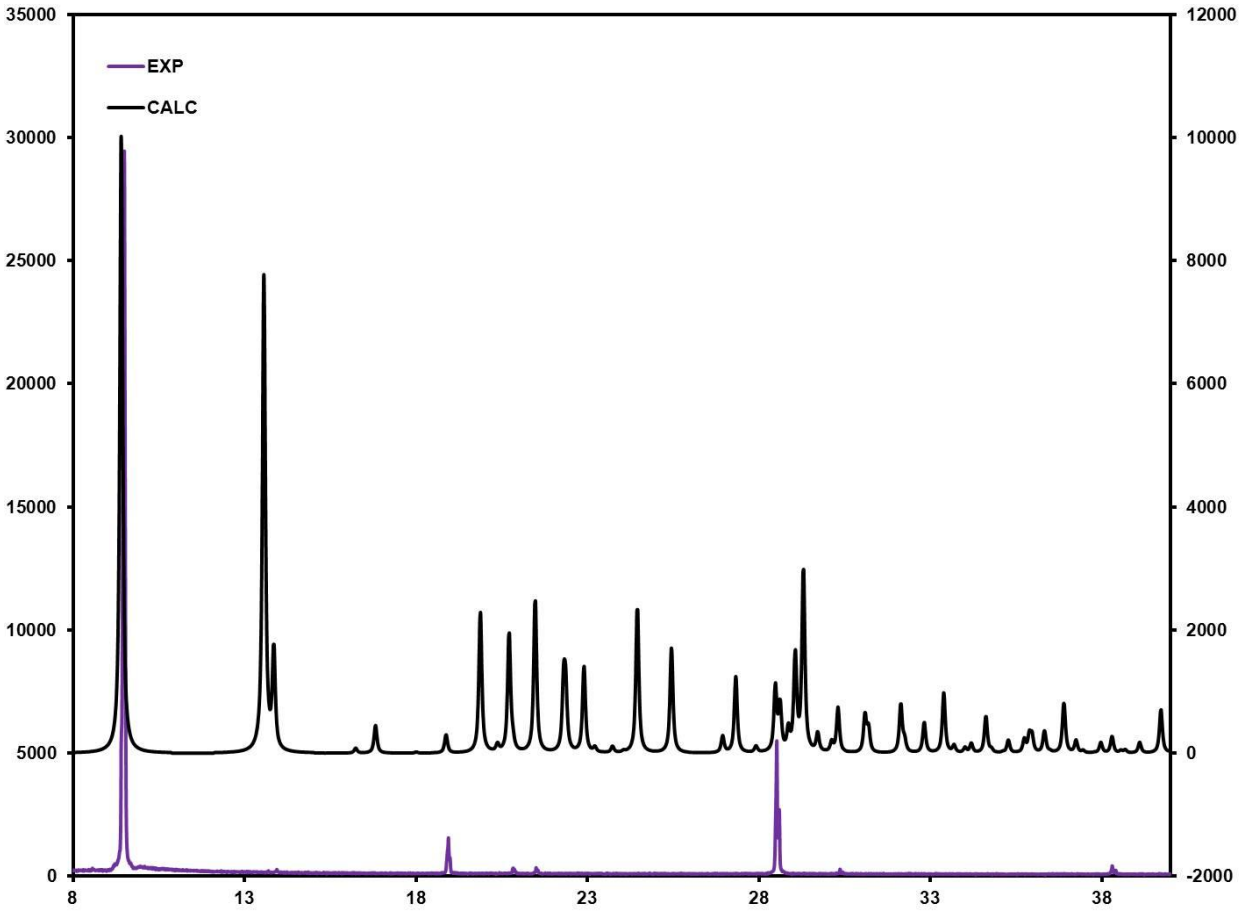

Figure S12. PXRD of 3. Due to the small sample size and nature of this material, it suffers from severe preferential orientation.

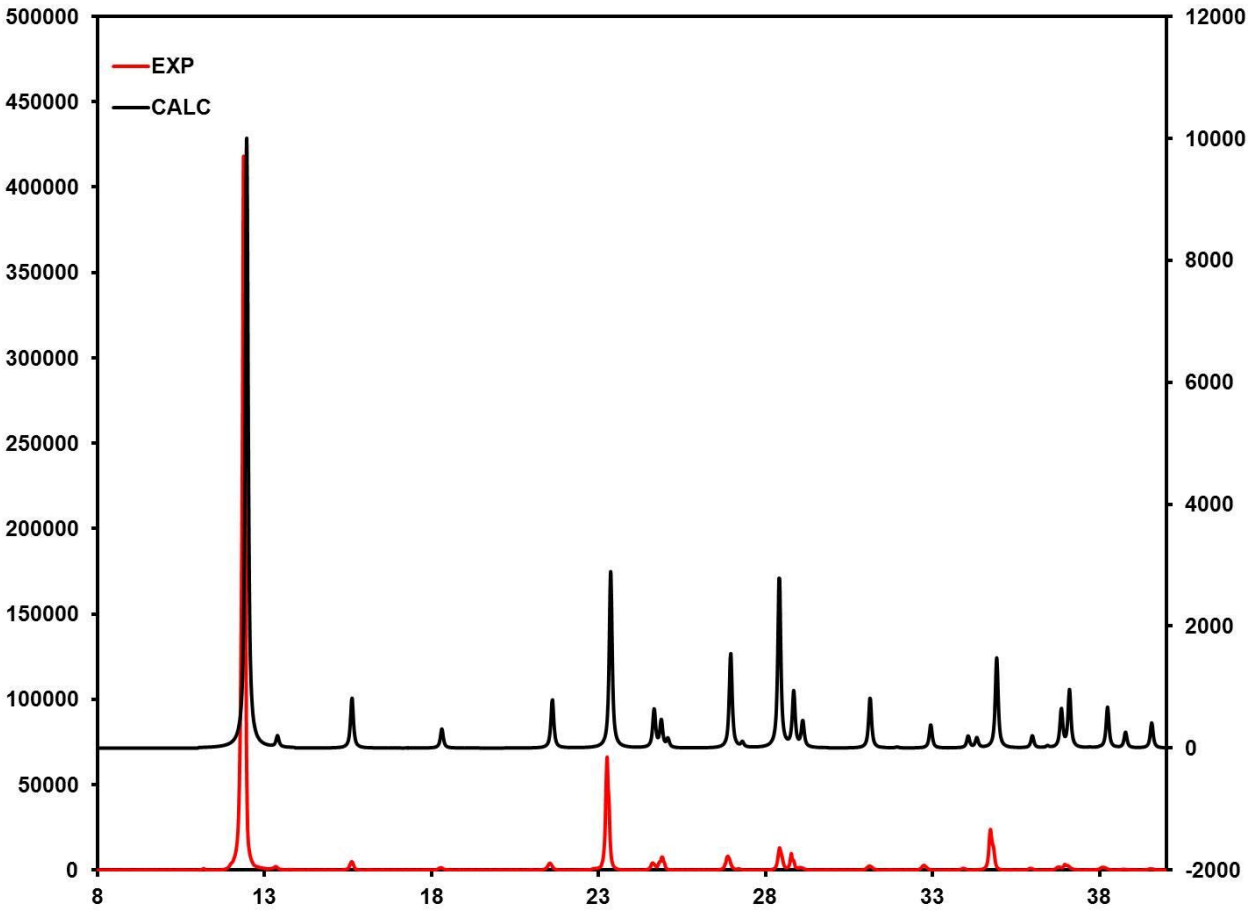

Figure S13. PXRD of 5. Due to the small sample size and nature of this material, it suffers from severe preferential orientation.

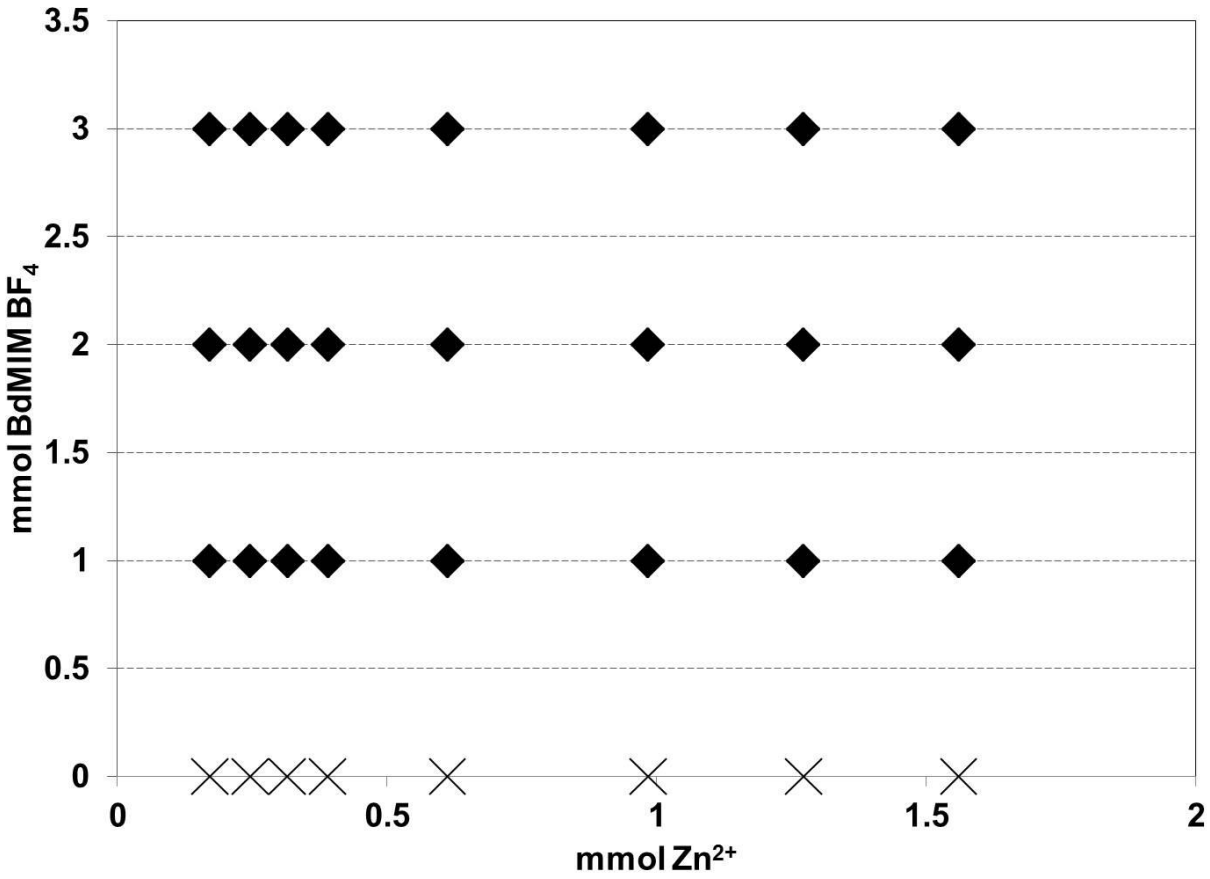

Figure S14. Synthesis field of reaction of $ZnCl_2$ with IBMPA. × = no reaction; ♦ = compound 4.