Supporting Information

Toward Organization of Cyano-Bridged Coordination Polymer Nanoparticles within Ionic Liquid Crystal.

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Table S1. Thermal data from DSC and POM observations for $[C_{10}\text{-MIM}][BF_4]$ and $Mn_{1.5}[Cr(CN)_6]/[C_{10}MIM][BF_4]$ samples. Enthalpy (J/g) is given within brackets.

Samples	cycle	T_m of water, °C	$T_{C\text{-}L}$, °C (enthalpy, J.G-1)
$[C_{10}\text{-MIM}][BF_4]$	heating	-	2.12 (-49.88)
	cooling	-	-42.05 (18.19)
$Mn_{1.5}[Cr(CN)_6]/[C_{10}MIM][BF_4]$	heating	0, Broad	2.67 (-60.24)
	cooling	-	-41.29 (22.4)

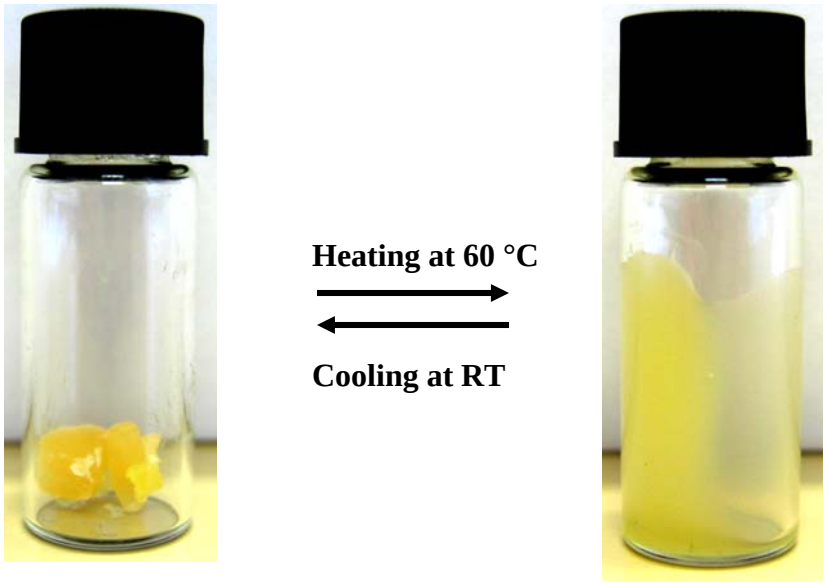


Figure S1. Photograph of the sample $Mn_{1.5}[Cr(CN)_6]/[C_{12}\text{-MIM}]BF_4$.

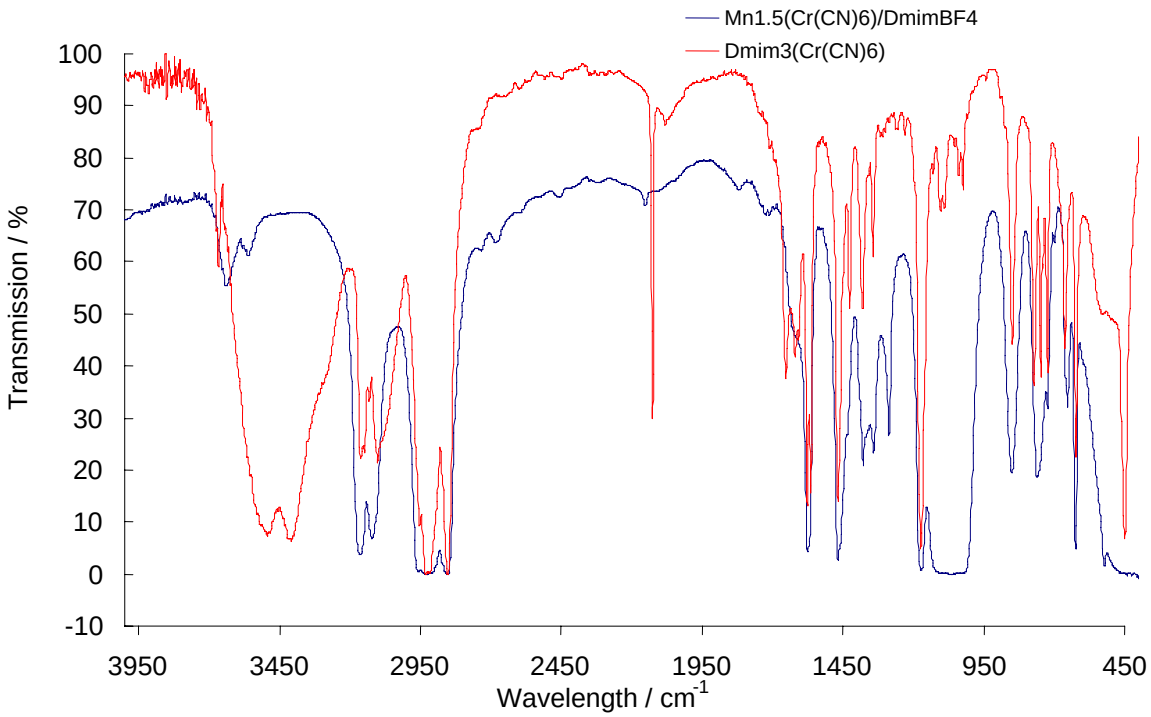


Figure S2. IR spectra of $Dmim_3(Cr(CN)_6)$ and $Mn_{1.5}(Cr(CN)_6)/DmimBF_4$.

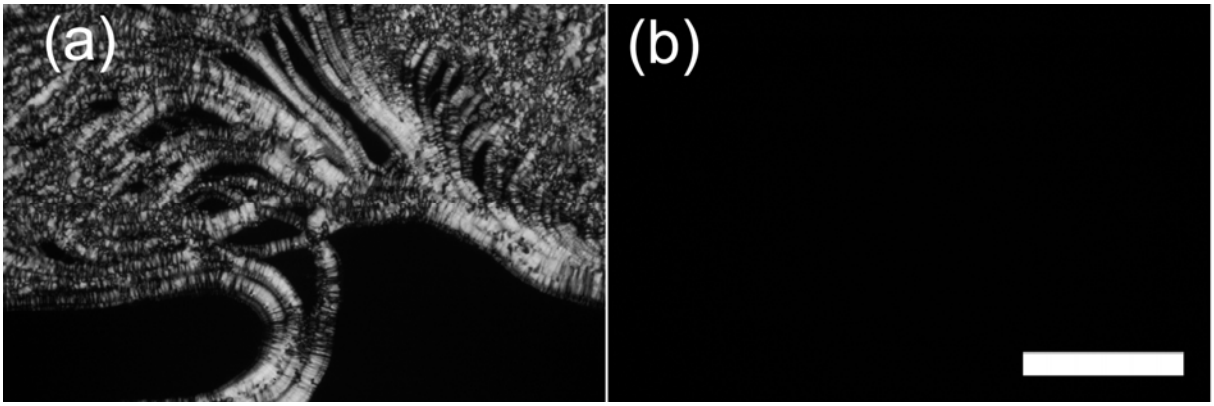


Figure S3. Optical microscopy images under polarized light for the $[C_{12}\text{-MIM}]BF_4$ sample taken at a) 30 °C and b) 60 °C. Scale bar = 100 μm.

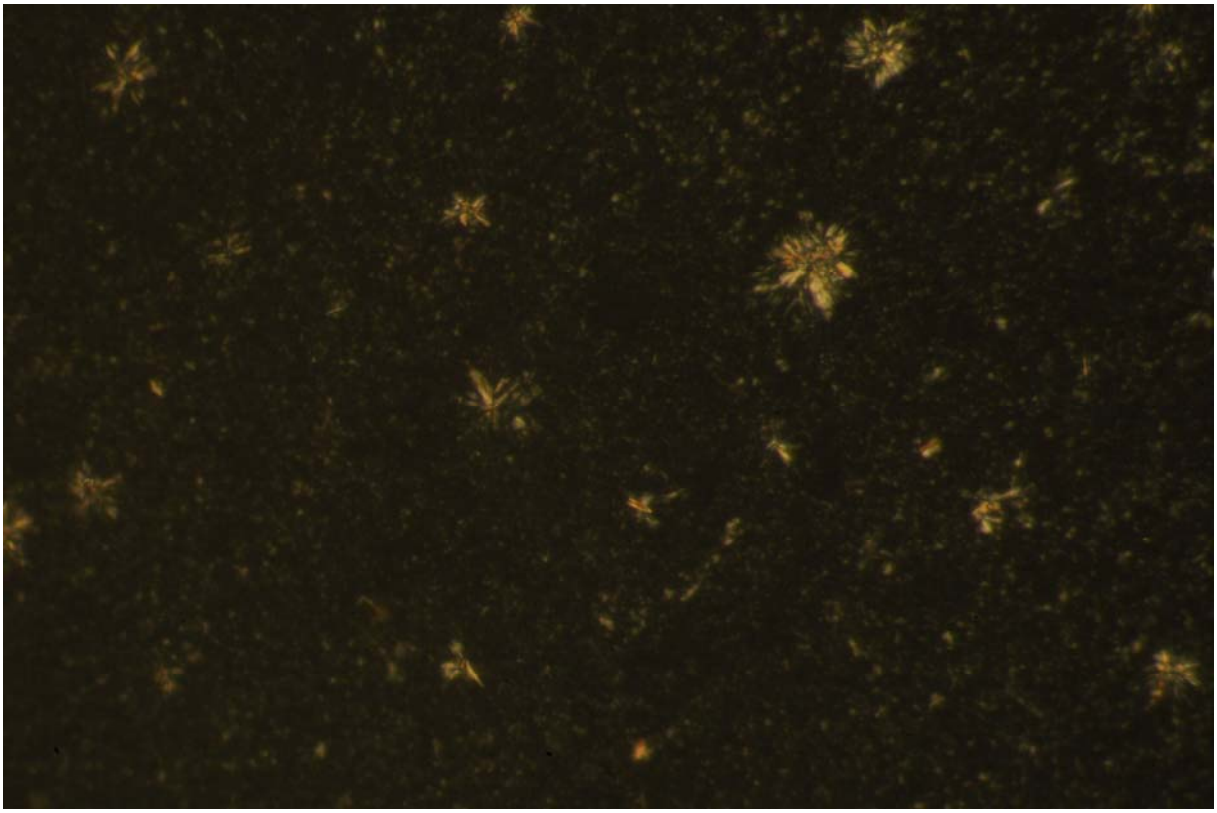
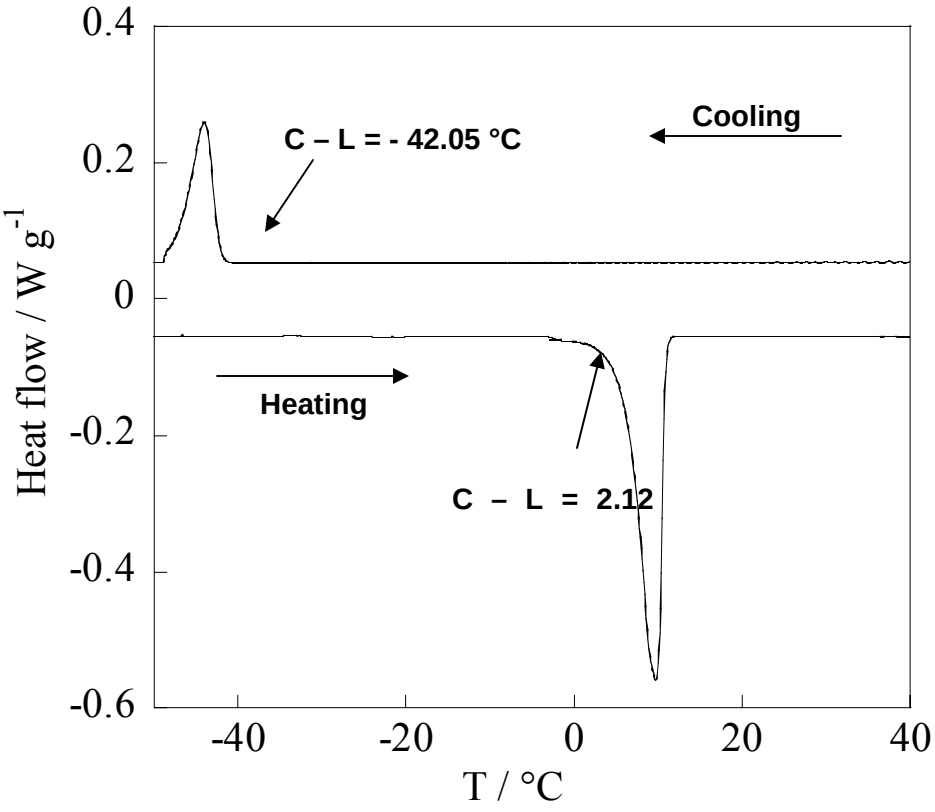


Figure S4. Polarized Optical Microscopy image of the $Mn_{1.5}[Cr(CN)_6]/[C_{12}\text{-MIM}]BF_4$ sample in the crystalline phase, at 0 °C, with 10 min of waiting showing formation of star-like crystals of water.


0.4
0.2
0
-0.2
-0.4
-0.6
Heat flow / W g-1
C – L = - 42.05 °C
Cooling
Heating
C – L = 2.12
-40
-20
0
20
40
T / °C

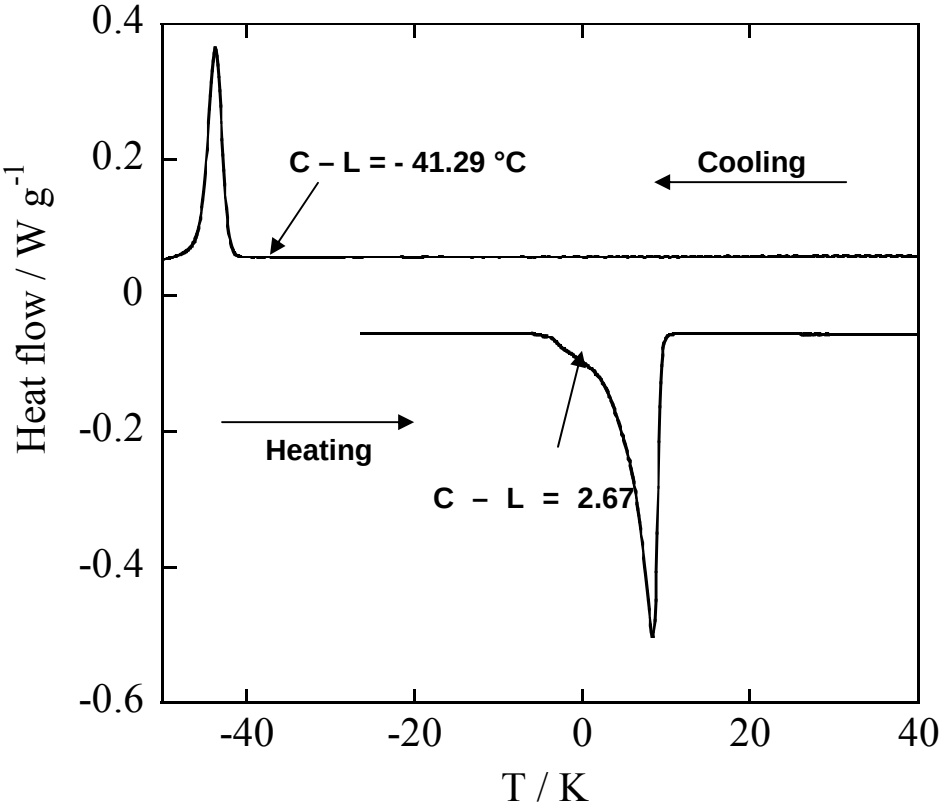

0.4
0.2
0
-0.2
-0.4
-0.6
Heat flow / W g-1
C – L = - 41.29 °C
Cooling
Heating
C – L = 2.67
-40
-20
0
20
40
T / K

Figure S5. DSC traces of the isotropic ionic liquids a) $[C_{10}\text{-MIM}]BF_4$ for the second heating (lower) and cooling (upper) cycles showing Crystal-Isotropic liquid (C-L) transitions and b) $Mn_{1.5}[Cr(CN)_6]/[C_{10}\text{-MIM}]BF_4$ sample for the second heating (lower) and cooling (upper) cycles showing Crystal-Isotropic liquid (C-L) transitions.

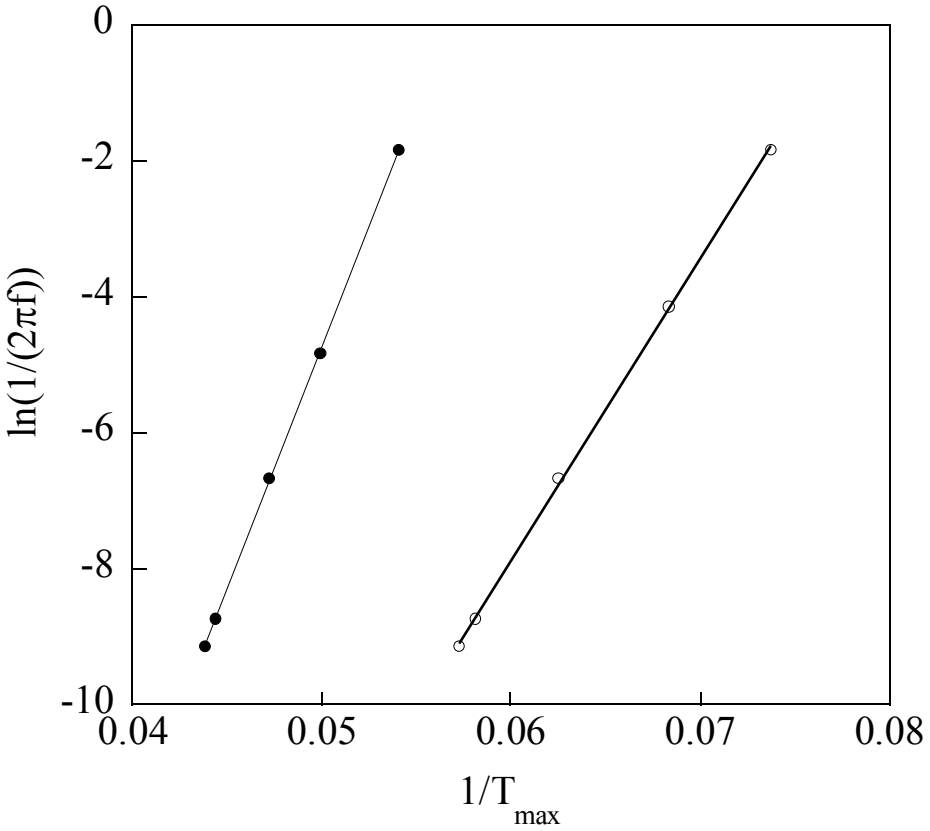
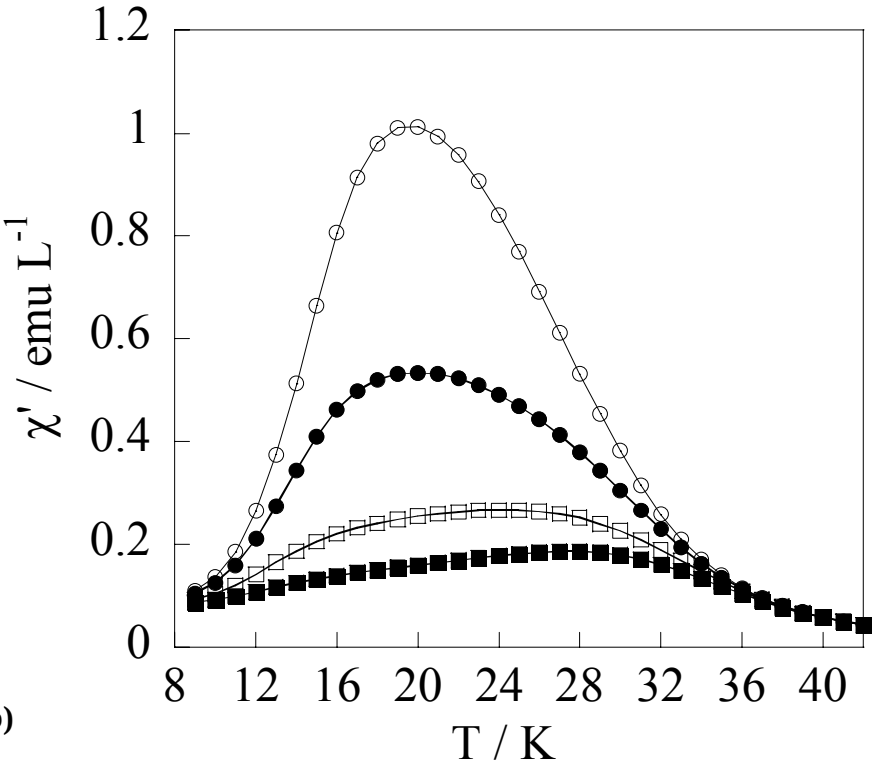


Figure S6. Thermal variation of the relaxation time according to the Arrhenius law for $Mn_{1.5}[Cr(CN)_6]/[C_{12}\text{-MIM}]BF_4$ (•) and $Mn_{1.5}[Cr(CN)_6]/[C_{10}\text{-MIM}]BF_4$ (o) samples.

a)



b)

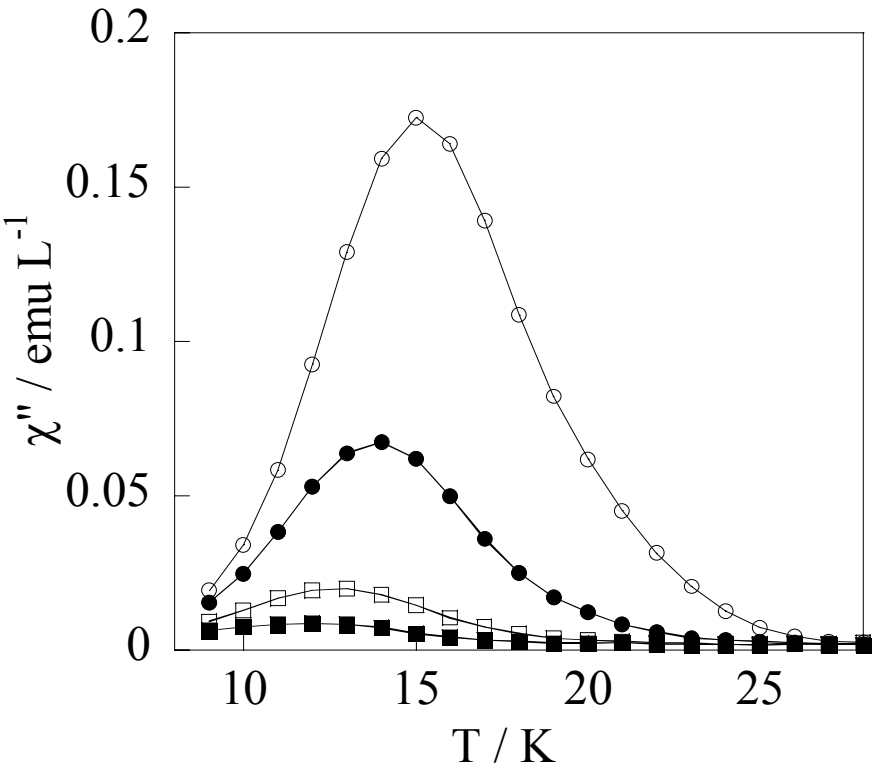


Figure S7. Temperature variation of the a) real and b) imaginary parts of the ac susceptibility performed with different applied fields for $Mn_{1.5}[Cr(CN)_6]/[C_{12}\text{-MIM}]BF_4$ sample. Applied field: 100 Oe (o); 250 Oe (●), 500 Oe (□) and 750 Oe (■).

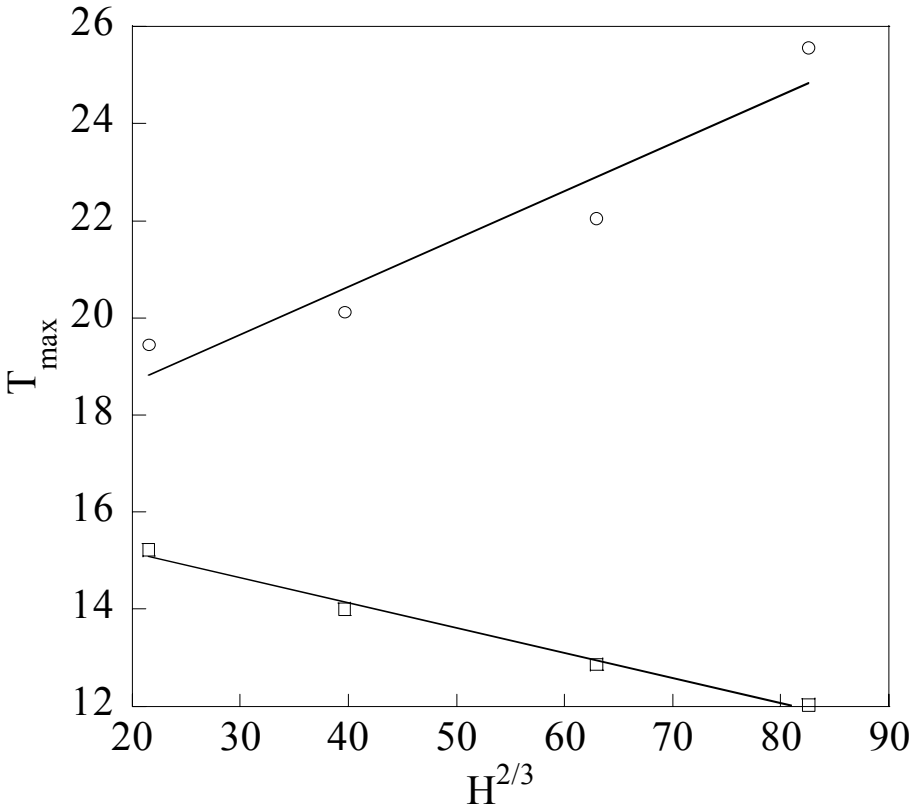


Figure S8. T_{max} (χ') and T_{max} (χ'') are plotted against $H^{2/3}$ for the $Mn_{1.5}[Cr(CN)_6]/[C_{10}$-MIM]$BF_4$ sample. The solid lines show a linear fit to the data.