

Supplementary Information

Emergence and origin of broader light emission from two-dimensional layered $(\text{C}_{12}\text{H}_{25}\text{NH}_3)_2\text{MnCl}_4$ at low-temperatures

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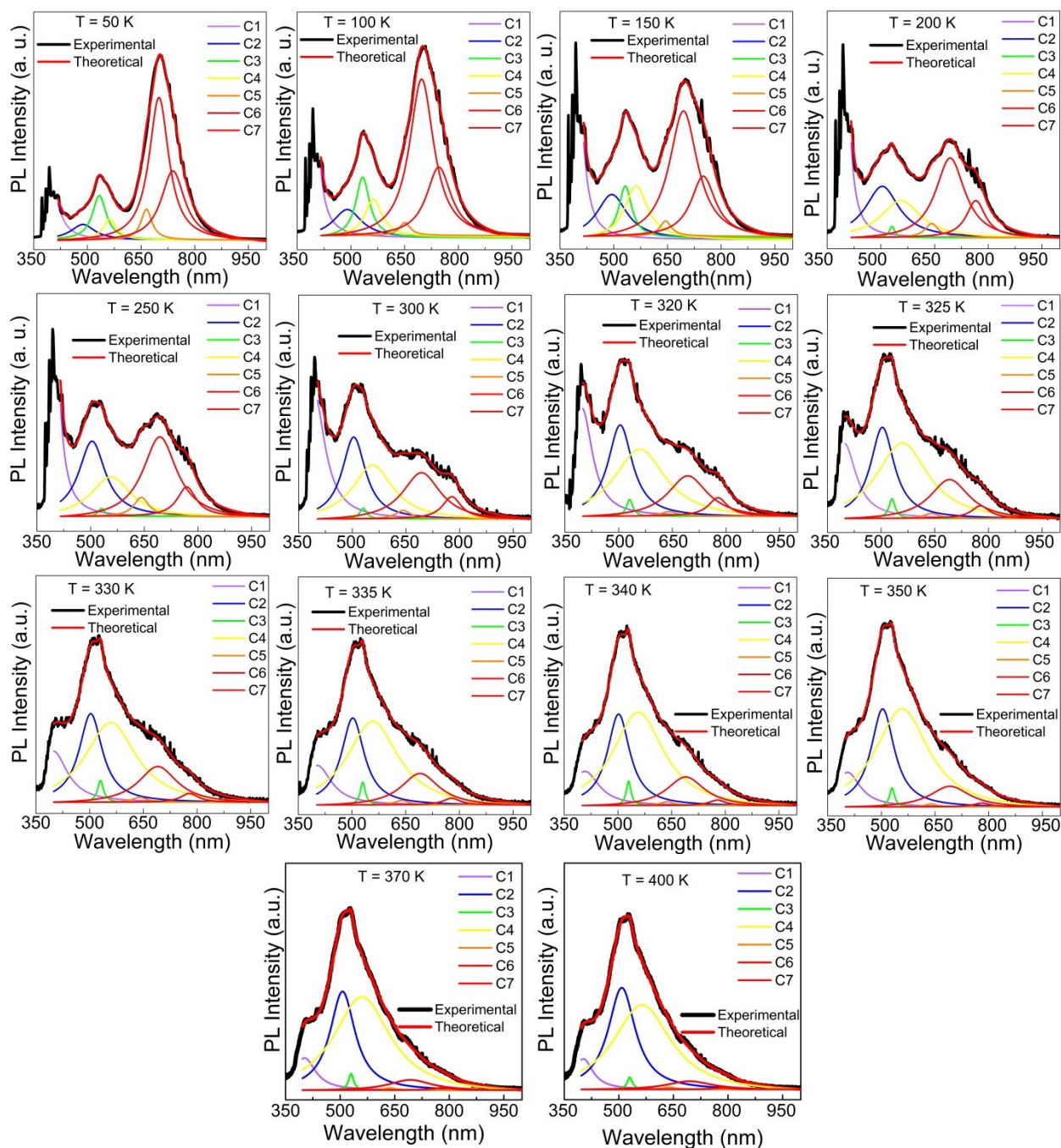


Fig. S1: Fitting of the PL spectra of $(\text{C}_{12}\text{H}_{25}\text{NH}_3)_2\text{MnCl}_4$ at various temperatures ranging from 5 K to 400 K using the sum of Lorentzians.

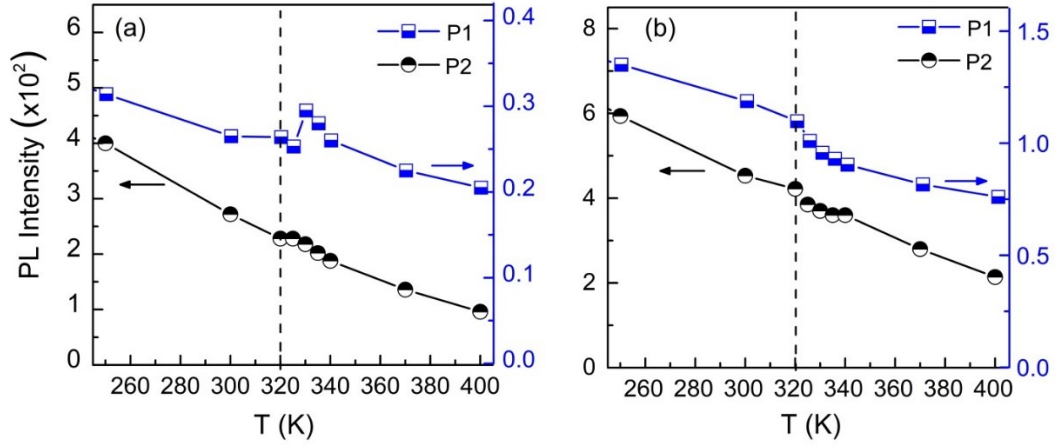


Fig. S2: Temperature dependence of the main emission peaks in the PL spectrum of (a) $(C_{12}H_{25}NH_3)_2CuCl_4$ and (b) $(C_{12}H_{25}NH_3)_2CuBr_4$ in the temperature range 250-400 K. The vertical dashed line marks the temperature at which a solid-solid phase transition is expected in these systems.

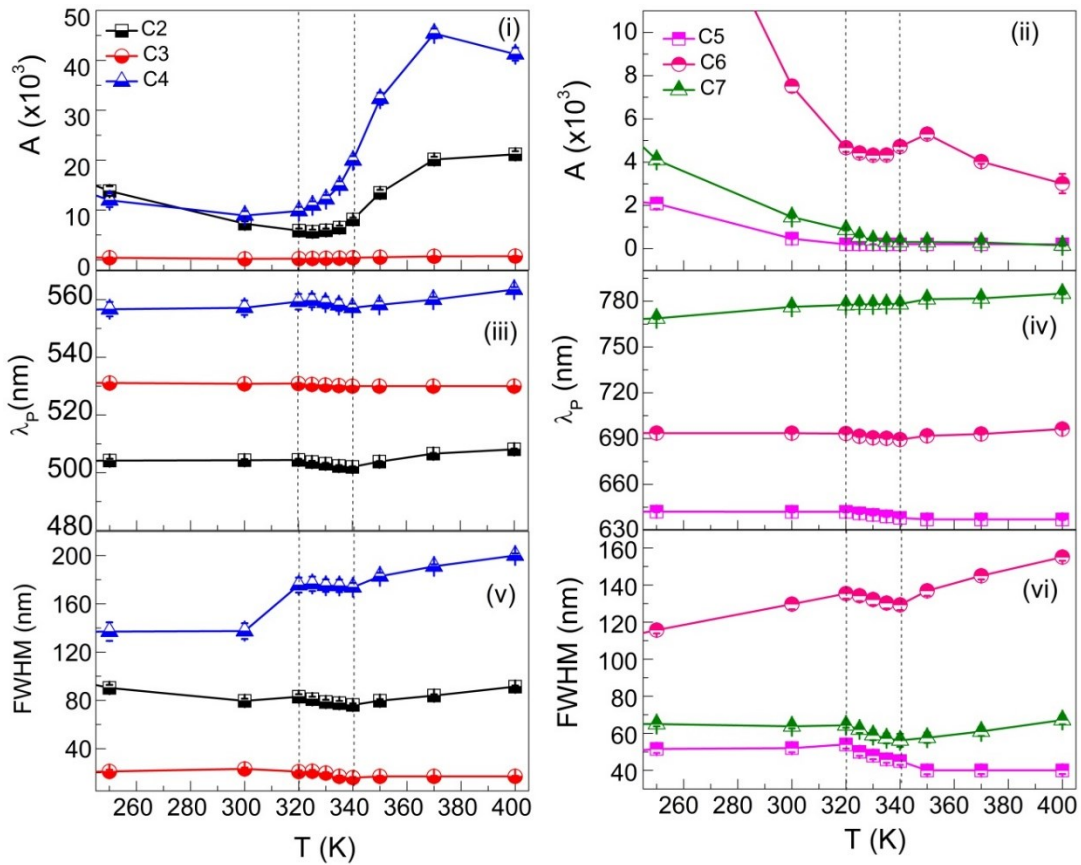


Fig. S3: Temperature dependence of the (i, ii) strength 'A', (iii, iv) peak wavelength ' λ_p ' and (v, vi) FWHM of the Lorentzian peaks (C2 to C7) in the PL spectra of $(C_{12}H_{25}NH_3)_2MnCl_4$. Vertical dashed lines mark possible solid-solid phase transition temperatures.