Supporting Information for

Structural phase transformation of quantum spin liquid herbertsmithite via pressure induced enhancement of cooperative Jahn-Teller effect and antisite disorder

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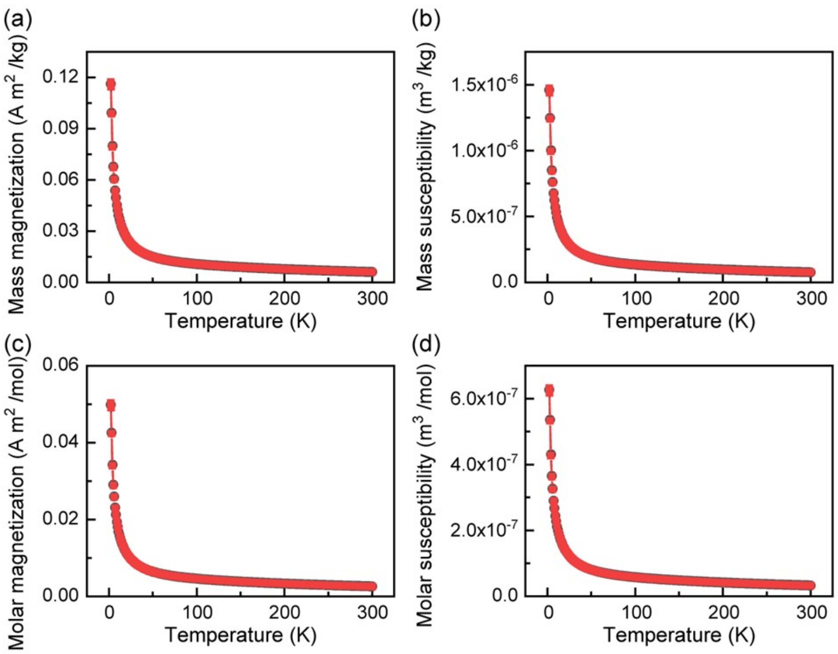

Figure S1 Temperature dependence of (a) mass magnetization, (b) mass susceptibility, (c) molar magnetization, and (d) molar susceptibility measured at 1000 Oe under ZFC-FC conditions.

Note: The cgs units are used in most of the primary literature on magnetism. For example, a series of literature about the magnetic studies on herbertsmithite and its related compounds are still written using cgs units. [1-5] The data presented in SI units are shown in the Figure S1-S2.

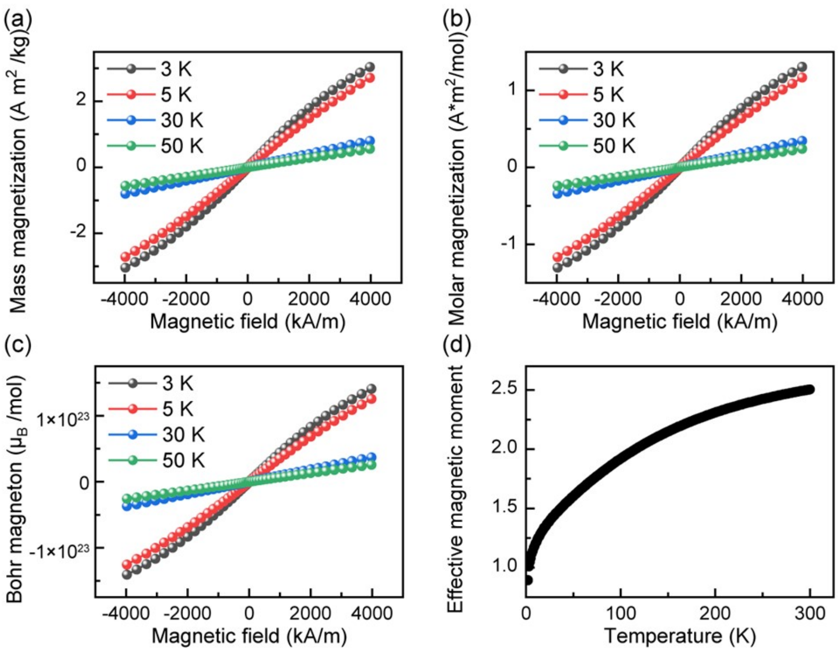

Figure S2 (a-c) Magnetization against applied external field of duplicate sample for several temperatures. (d) The value of effective magnetic moment as a function of temperature.

Note: As shown in Figure S2 a-c, the M-H data were presented in mass magnetization, molar magnetization, and Bohr magneton/mol, respectively. The effective magnetic moment (μ_{eff}) is generally expressed in terms of the Bohr magneton. In fact, the values of μ_{eff} depend on the definitions and the system of units. It is calculated from the molar susceptibility. The dimensionless nature of μ_{eff} in the SI approach is demonstrated below using the equation[6]

$$\chi_M = \frac{N_A \mu_0 \mu_B^2 \mu_{eff}^2}{3 k_B T}$$

where χ_M is the molar susceptibility ($m^3\ mol^{-1}$), N_A is the Avogadro constant ($N_A = 6.023\times10^{23}$/mol), μ_0 is the permeability of a vacuum ($\mu_0 = 4\pi\times10^{-7}$ kg m s^{-2} A^{-2}), μ_B the Bohr magneton ($\mu_B = 9.274\times10^{-24}$ A m^2), k_B is the Boltzmann constant ($k_B = 1.38\times10^{-23}$ J K^{-1}) and T is the thermodynamic temperature (K), respectively. The SI units of the physical quantities are given in parentheses.

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