Supplementary Information

## Realization of an excellent two-dimensional Heisenberg ferromagnetic system: synthesis, structure, and thermodynamic properties of piperazinediium tetrabromocuprate

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## 1. Zero-field cooled (ZFC) and field cooled (FC) data of magnetic susceptibility

To further verify the absence of magnetic order in PTBC, ZFC and FC magnetic susceptibility were measured, as shown in Fig. S1. The ZFC and FC curves have no obvious difference in the temperature range between 2 and 300 K, indicating the absence of FM order.



**Figure S1.** ZFC and FC data of magnetic susceptibility with an external field of 2000 Oe. The vertical axis is plotted in log scale.

## 2. Elemental analysis

We have conducted elemental analysis on a Vario EL Cube (Elementar, Germany) based on the combustion method, in order to determine the carbon, nitrogen, and hydrogen contents of the sample. The determined atomic ratio is C:H:N=2.013:5.989:1, as shown in Table S1. This result is in good agreement with the  $C_4H_{12}N_2$  stoichiometry of PTBC.

Sample	C (wt.%)	H (wt.%)	N (wt.%)	Molar composition
PTBC	54.720	13.567	31.714	$C_{4.026}H_{11.978}N_2$

 Table S1. Elemental analysis result for PTBC.