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Supplementary Information

Magnetic and luminescent properties of an inorganic 3D nickel–vanadium bimetallic framework

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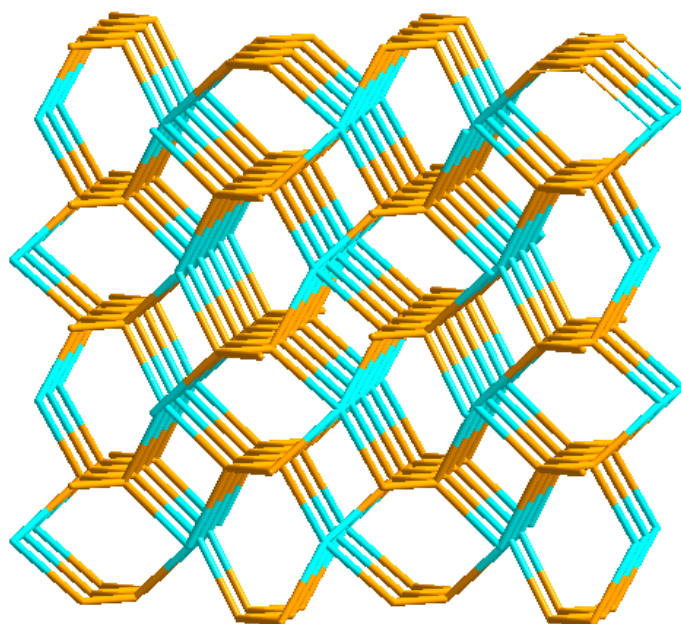


Fig. S1. The 3D topology of bimetallic framework for **1** (color code: VO₄ tetrahedron, yellow; NiO₄(H₂O)₂ octahedron, turquoise).

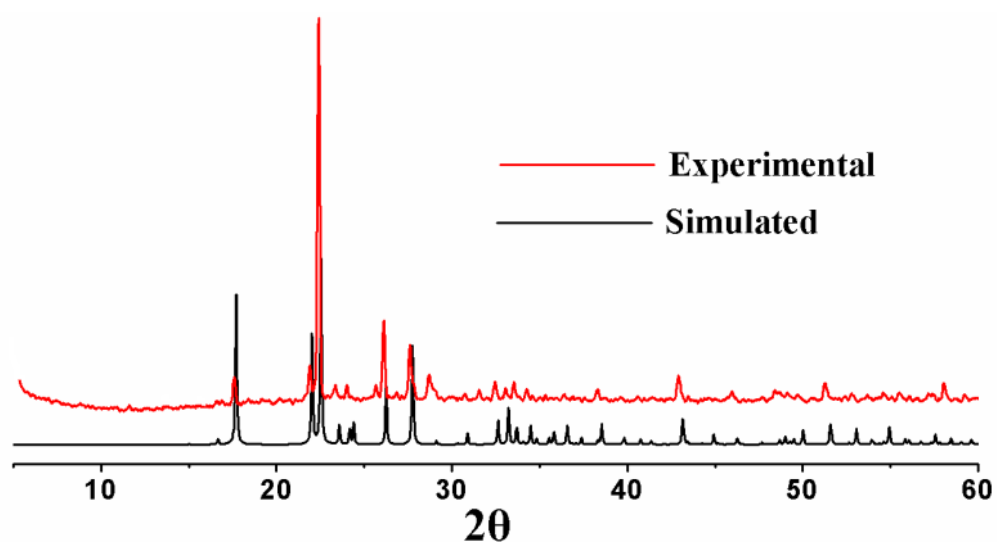


Fig. S2. PXRD patterns of solids **1** (black: calculated; red: as-synthesized sample, showing the powder product is in good agreement with the calculated pattern from the single-crystal X-ray diffraction).

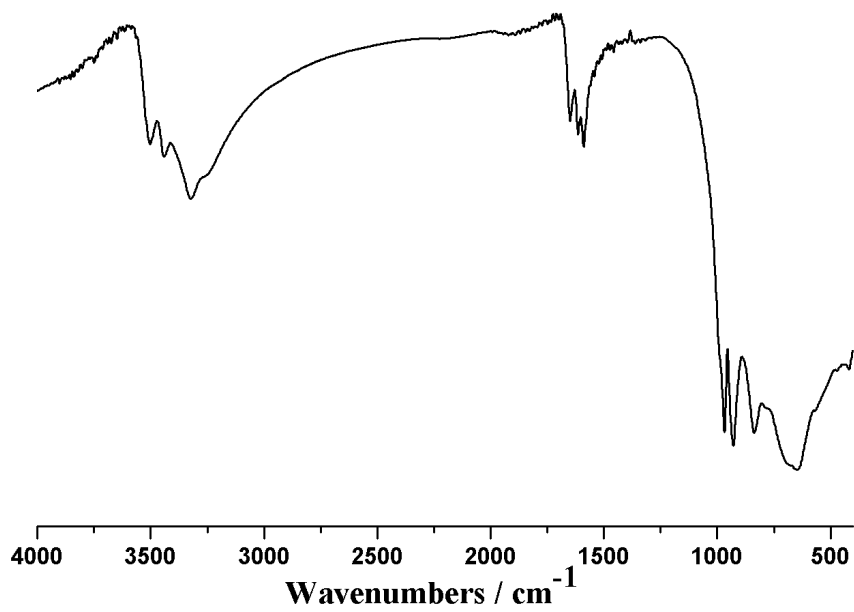


Fig. S3. The IR spectra of **1** from 4000-400 cm⁻¹.

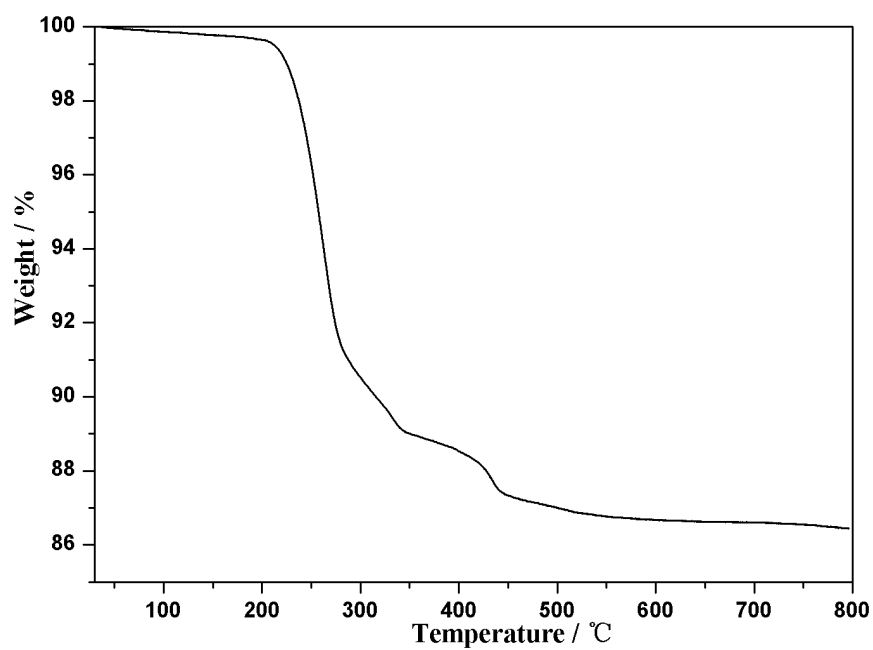


Fig. S4. The thermogravimetric (TG) curves of **1** measured from 30 to 800 °C under N₂ atmosphere with the heating rate of 10 °C/min.

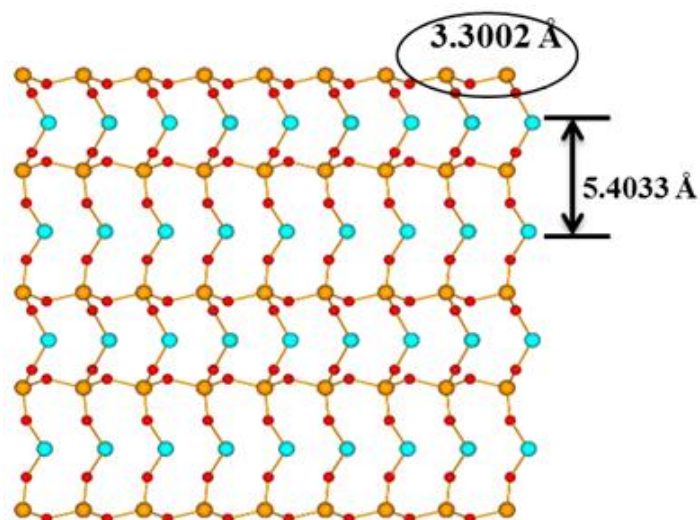


Fig. S5. The connection mode and distance of $\text{Ni}^{2+}\cdots\text{Ni}^{2+}$ and $\text{V}^{5+}\cdots\text{V}^{5+}$ in the 2D layer, the distance of $\text{Ni}^{2+}\cdots\text{Ni}^{2+}$ and $\text{V}^{5+}\cdots\text{V}^{5+}$ are marked.

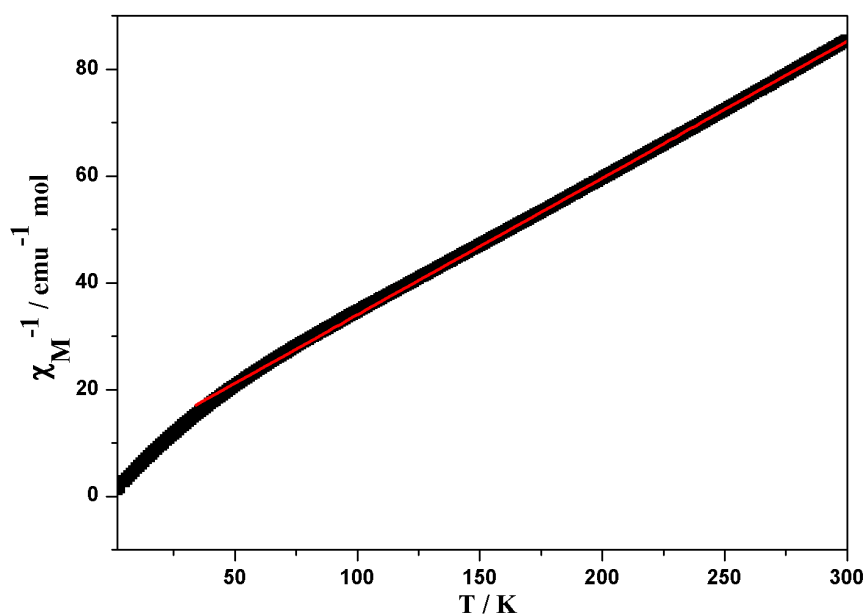


Fig. S6. The temperature dependence of the inverse magnetic susceptibility χ_M^{-1} for **1** between 2 and 300 K. The solid red line was generated from the best fit by the Curie-Weiss expression in the range of 35 and 300 K with the Curie constant $C = 3.90 \text{ emu K mol}^{-1}$ and the Weiss constant $\theta = -32.71 \text{ K}$.

Table S1. Bond-valence sum calculations for **1**.

Bonds	Bond length (Å)	BVS	Bonds	Bond length (Å)	BVS
V(1)-O(1)	1.655(3)	1.378	Ni(1)-O(1)	2.022(3)	0.351
V(1)-O(2)	1.629(3)	1.478	Ni(1)-O(1) #4	2.022(3)	0.351
V(1)-O(3)	1.804(3)	0.921	Ni(1)-O(2) #1	2.031(3)	0.343
V(1)-O(3) #2	1.802(3)	0.926	Ni(1)-O(2) #5	2.031(3)	0.343

		Ni(1)-O(1W)	2.069(4)	0.309
		Ni(1)-O(2W)	2.034(4)	0.340
sum	4.803		sum	2.037
