Synthesis and Characterization of a Three-dimensional Porous Compound: 
$[\text{Cu}(\text{H}_2\text{O})_6][(\text{Cu}(\text{H}_2\text{O})_2)_2\{\text{Cu}(\text{H}_2\text{O})_4\text{H}_4\text{W}_{12}\text{O}_{42}\}] \cdot 12\text{H}_2\text{O}$

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A novel transition metal polyoxotungstate, $[\text{Cu}(\text{H}_2\text{O})_6][(\text{Cu}(\text{H}_2\text{O})_2)_2\{\text{Cu}(\text{H}_2\text{O})_4\text{H}_4\text{W}_{12}\text{O}_{42}\}] \cdot 12\text{H}_2\text{O}$ (1), has been synthesized in aqueous solution and characterized by single-crystal X-ray diffraction, elemental analysis, IR and UV/vis spectroscopy, and TG analysis. The paradodecatungstate anions $[\text{H}_2\text{W}_{12}\text{O}_{42}]^{10-}$ are linked by CuO$_6$ octahedra, forming a three-dimensional (3D) structure. The magnetic susceptibility of compound 1 in the temperature range 2 – 300 K shows the presence of antiferromagnetic interactions within the uniform Cu2⋯Cu3 chains.

Key words: Polyoxometalates, Transition Metal Bridge, 3D Architecture, Magnetic Properties