Synthesis and Characterization of a Three-dimensional Porous Compound: $[Cu(H_2O)_6][\{Cu(H_2O)_2\}_2\{Cu(H_2O)_4H_4W_{12}O_{42}\}]\cdot 12H_2O$

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A novel transition metal polyoxotungstate, $[Cu(H_2O)_6][\{Cu(H_2O)_2\}_2\{Cu(H_2O)_4H_4W_{12}O_{42}\}]\cdot 12H_2O$ (**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 $[H_2W_{12}O_{42}]^{10-}$ 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