

Hybrid Cu-containing compounds based on lacunary Strandberg anions: synthesis under mild conditions, crystal structure, and magnetic properties.

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A one-pot reaction of a copper source (metallic powder Cu⁰ or Cu²⁺ salts) and bpy (bpy = 2,2'-bipyridine) in the presence of (NH₄)₂HPO₄ and (NH₄)₆Mo₇O₂₄·4H₂O yields heterometallic hybrid compounds of the general type {[Cu(bpy)_n(H₂O)_m]_p[P₂Mo_xO_y]}_n. The structures exhibit a number of phosphomolybdate POMs including not only a common Strandberg anion [P₂Mo₅O₂₃]⁶⁻ but also its unprecedented bi- and trilacunary derivatives [P₂Mo₃O₁₈]⁸⁻ and [P₂Mo₂O₁₅]⁸⁻. The structural determinants including the metal source (copper powder vs copper salts), counterion of the salts, and stoichiometry of the reagents were examined. An *ex situ* EPR study revealed the formation of different Cu^{II} complexes in the reaction mixture depending on the copper precursor. The obtained compounds have been found to possess selectivity toward the sorption of methylene blue in a mixture of organic dyes. DC magnetic measurements of **1–3** indicate rather strong antiferromagnetic metal–metal exchange interactions. Compound **1** exhibits field-induced slow magnetic relaxation in AC magnetic measurements, which is a rarely observed phenomenon among Cu(II) complexes.

Słowa kluczowe

Anions, Crystals, Ligands, Copper, Molecules

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