The 4-picolinium salt \((\text{C}_6\text{H}_8\text{N})_3[\text{PMo}_{12}\text{O}_{40}]\) was synthesized hydrothermally and characterized by IR spectroscopy, TG-DTA data and single-crystal X-ray diffraction. The results indicate that the compound consists of a \([\text{PMo}_{12}\text{O}_{40}]^{3-}\) heteropolyoxoanion and 4-picolinium cations \([\text{C}_6\text{H}_8\text{N}]^{+}\). A supramolecular structure is formed via intermolecular hydrogen-bonding between the different structural units. Crystal data: monoclinic, space group \(P2_1/c\), \(a = 19.7004(3)\) Å, \(b = 14.0785(2)\) Å, \(c = 33.0209(5)\) Å, \(\beta = 91.3590(10)^{\circ}\), \(V = 9155.8(2)\) Å\(^3\), \(Z = 8\), \(wR^2 = 0.0730\). \((\text{C}_6\text{H}_8\text{N})_3[\text{PMo}_{12}\text{O}_{40}]\) has a high catalytic activity for the oxidative elimination of acetone from gases as tested in a continuous-flow fixed-bed micro-reactor. When the initial concentration is 5.2 g m\(^{-3}\) in air, and the flow rate is 3.3 mL min\(^{-1}\), 93 % of the acetone is eliminated at 70 °C.

Key words: Heteropolyoxoanion, 4-Picoline, Hydrothermal Method, Crystal Structure, Oxidative Elimination