Two new paratungstate-based compounds were isolated from the acetate buffer solution containing decatungstate \([\text{W}_{10}\text{O}_{32}]^{4-}\) at different reaction temperatures. The two compounds have been characterized by elemental analysis, IR spectroscopy, thermogravimetric analysis (TGA), and single crystal X-ray diffraction, and formulated as \((\text{H}_3\text{O})_3[\{\text{K}(\text{H}_2\text{O})\}_2\{\text{Na}_2(\text{H}_2\text{O})_8\}_2(\text{Na}_{0.5}\text{H}_2\text{O})_2(\text{H}_2\text{W}_{12}\text{O}_{42})]\cdot\text{6H}_2\text{O}\) (1) and \((\text{H}_3\text{O})_2[\{\text{K}(\text{H}_2\text{O})_4\}_2\{\text{Na}_3(\text{H}_2\text{O})_9\}_2(\text{H}_2\text{W}_{12}\text{O}_{42})]\cdot\text{2H}_2\text{O}\) (2). Compounds 1 and 2 exhibit different three-dimensional architectures with bridging sodium and potassium as countercations for the paratungstate anion. Compound 1 displays an intense blue luminescence in the solid state. The structural transformation from \([\text{W}_{10}\text{O}_{32}]^{4-}\) to \([\text{H}_2\text{W}_{12}\text{O}_{42}]^{10-}\) in an acetate buffer provides a route for the synthesis of new paratungstate-based compounds.

Key words: Paratungstate-B, Decatungstate, Structural Transformation, Luminescence