A Keggin-type Arsenotungstate Anion-supported Transition Metal Complex: Hydrothermal Synthesis and Characterization of

$\text{[Fe}(2,2'\text{-bipy})_3\text{]}_{1.5}[\text{AsW}^{VI}_{10}\text{W}^V_2\text{O}_{40}\text{Fe}(2,2'\text{-bipy})_2(\text{H}_2\text{O})] \cdot 0.25\text{H}_2\text{O}$

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A Keggin-type arsenotungstate anion-supported iron-bipyridine complex, $[\text{Fe}(2,2'\text{-bipy})_3\text{]}_{1.5-}[\text{AsW}^{VI}_{10}\text{W}^V_2\text{O}_{40}\text{Fe}(2,2'\text{-bipy})_2(\text{H}_2\text{O})] \cdot 0.25\text{H}_2\text{O}$, has been hydrothermally synthesized and characterized by IR and ESR spectra, TG-DTA analysis, and single crystal X-ray diffraction. Each structural unit of the title compound consists of one $[\text{AsW}^{VI}_{10}\text{W}^V_2\text{O}_{40}\text{Fe}(2,2'\text{-bipy})_2(\text{H}_2\text{O})]^3-$ heteropolyanion, one and a half $[\text{Fe}(2,2'\text{-bipy})_3]^2+$ cations, and a quarter of an $\text{H}_2\text{O}$ molecule. In the heteropolyanion the $[\text{Fe}(2,2'\text{-bipy})_2(\text{H}_2\text{O})]^2+$ unit is covalently bonded to the reduced Keggin polyoxoanion $[\text{AsW}^{VI}_{10}\text{W}^V_2\text{O}_{40}]^5^-$. The complex is monoclinic, space group $C2/c$ with $a = 46.8079(13)$, $b = 14.3990(4)$, $c = 26.1085(8) \text{ Å}$, $\beta = 90.00(5)^\circ$, $Z = 8$, $D_c = 3.10 \text{ g/cm}^3$.

Key words: Keggin-type Anions, Arsenotungstate, Hydrothermal Synthesis