

A Chain-like Polyoxotungstate Constructed from $[\text{CeW}_{10}\text{O}_{36}]^{9-}$, $[\text{Na}_5(\text{H}_2\text{O})_{17}\text{Cl}]^{4+}$, and $[\text{Na}_2(\text{H}_2\text{O})_8]^{2+}$ Units: $(\text{NH}_4)_3[\text{Na}_5(\text{H}_2\text{O})_{17}\text{Cl}]\{[\text{Na}(\text{H}_2\text{O})_4]_2[\text{CeW}_{10}\text{O}_{36}]\} \cdot 6 \text{H}_2\text{O}$

Ling Yuan^{a,b}, Chao Qin^a, Xinlong Wang^a, and Enbo Wang^a

^a Key Laboratory of Polyoxometalate Science of the Ministry of Education, Institute of Polyoxometalate Chemistry, Department of Chemistry, Northeast Normal University, Changchun Jilin 130024, People's Republic of China

^b Department of Chemistry, Xingan Occupation Technic College Wulanhaote, 137400, People's Republic of China

Reprint requests to Prof. Enbo Wang. E-mail: wangenbo@public.cc.jl.cn
or wangeb889@nenu.edu.cn

Z. Naturforsch. **2007**, 62b, 1471 – 1475; received June 13, 2007

An unusual cerium-containing decaoxotungstate complex, $(\text{NH}_4)_3[\text{Na}_5(\text{H}_2\text{O})_{17}\text{Cl}]\{[\text{Na}(\text{H}_2\text{O})_4]_2[\text{CeW}_{10}\text{O}_{36}]\} \cdot 6\text{H}_2\text{O}$ (**1**) has been synthesized and characterized by IR, TG, and single crystal X-ray diffraction studies (yellow crystals, orthorhombic, space group *Imm*2, $a = 11.473(2)$, $b = 15.225(3)$, $c = 17.646(7)$ Å, $V = 3082.3(15)$ Å³, $Z = 2$, $R = 0.046$). In this compound, sandwich-type $[\text{CeW}_{10}\text{O}_{36}]^{9-}$ clusters are linked by binuclear $[\text{Na}_2(\text{H}_2\text{O})_8]^{2+}$ units by sharing oxygen atoms into linear chains, which are further extended into a 2D supramolecular network *via* pentanuclear $[\text{Na}_5(\text{H}_2\text{O})_{17}\text{Cl}]^{4+}$ units by strong hydrogen bonding interactions.

Key words: Polyoxotungstate, Cerium, Cluster, Crystal Structure