Metallic Clusters Interactions: Structures of $Co(H_2O)_6K_2M_2W_4O_{19}\cdot xH_2O$ (M=V, Nb)

Mongi Debbabi[a], Hafedh Driss[a], René Thouvenot[b], [a]*Laboratoire de Physico-Chimie des Matériaux, Faculté des Sciences de Monastir. Monstir 5019 Tunisia.* [b]*Laboratoire de Chimie inorganique et Matériaux Moléculaires case courrier 42, 4 place Jussieu Université Pierre & Marie Curie 75252 Paris Cedex 05.* E-mail: mngdbb@enim.rnu.tn

The compounds $[Co(H_2O)_6]K_2V_2W_4O_{19}\cdot 3H_2O$ **(1)** and $[Co(H_2O)_6]K_2Nb_2W_4O_{19}$ **(2)** crystallizes respectively in the Orthorhombic system, space group Cmcm and the Hexagonal system, space group R-3m. The cell parameters for **(1)** are a=11.645(1)Å, b=13.242(1)Å, c=15.417(1)Å, V=2377(3) Å³ with Z=4 and a=9.887(2) Å c=24.242(1) Å, V= 2052.4(2) Å³ with Z=4 for **(2)**. The structure of the anion $[M_2W_4O_{19}]^{4-}$ (M=V or Nb) is essentially that of Lindqvist[1], the metals positions are disordered, occupancies of V or Nb and W were refined and are close to the theoretical values. The crystal structure shows that the oppositely charged polyhedral ions are arranged alternately and have their faces parallel to each other for maximal interactions (face-to-face interaction)[2]. The crystal **(1)** has large mono-directional channels along the [001] axis with a sectional area of 10.23 x 6.35 $Å^2$ that are filed by cobalt. The crystal **(2)** has also mono-directional quasi squared channels along the [012] axis with a sectional area of $(4.52)^2$ $Å^2$ that are filed by cobalt.

[1] Lindqvist, *I. Ark. Kemi.,* 1952, **5**, 247. [2] Son J., Kwon Y., *Inorg. Chem.*, 2004, **43**, 1929-1932.

Keywords: polyoxometalate structures, inorganic clusters, interactions