

sup>+, Mg²⁺, Co²⁺ and Zn²⁺) are stable in vacuum, whereas those with high basal spacing, formed by the Ca²⁺ sample with TMP, and Ca²⁺ and Fe³⁺ samples with TEP are transformed into low basal spacing complexes in vacuum. The complexes with high basal spacing (Cu²⁺ sample with TMP and TEP) are stable in vacuum.

The TMP and TEP complexes stable in vacuum with low spacing are thermally destroyed in one or two stages with two loss maxima, as a result of partial burning of phosphite molecules. Those with high spacing (Cu²⁺) are destroyed in two stages; the first is probably the result of the transformation process from high to low spacing, as a consequence of the structural reorganization of the molecules which remain in the interlayer space, and the second, could be associated with the destruction of low spacing complexes.

The IR spectra show that the molecule and the cation are linked by the P of the phosphite, which produces a reinforcement of the other bonds in the molecule, caused by an inductive effect. The phosphite intercalation is accompanied by a partial isomerization of phosphite to phosphonate.

The heat of adsorption of phosphites shows that the molecule-cation bond is ion-dipole. In the Cu sample with trimethyl phosphite, this bond seems to be reinforced by retrodonation of electrons from copper to ligand. Finally, the possible disposition of phosphite molecules in the interlayer space is considered. For this purpose, ab initio calculations have been performed on the different conformers of the TMP molecule at 6- 31G* and 6- 31+G* basis sets.

Key Words: Ab initio Calculations • Complexes • Formation Mechanism • Montmorillonite • Stability • Trialkyl Phosphites

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