

RAMAN SPECTROSCOPY OF THE $[\text{SiMo}_{12}\text{O}_{40}]$ -COMPLEX IN THE HIGHTEMPERATURE SOLUTION

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Heteropolyacid $\text{H}_4[\text{SiMo}_{12}\text{O}_{40}]$ is supposed to be one of the most stable compound in broad range of temperatures and pH values [1].

The water solution of the acid was studied by the Raman spectroscopy at the initial value $\text{pH}=1.2$. The solution with the concentration 0.002 mol/l was placed into autoclave with sapphire windows. The filling coefficient was 0.5, the air was displaced by the gaseous argon.

The characteristic vibrational frequencies of the studied complex 982cm^{-1} and 960cm^{-1} [2] were observed up to 230°C without any significant change of their intensities. But in the range $230\text{--}240^\circ\text{C}$ a fast destruction of the complex was find out. The same result was observed for the solution with the 0.2 mol/l concentration of NaCl. The complex $\text{Na}_3[\text{PMo}_{12}\text{O}_{40}]$ is even more unstable and undergoes destruction at $150\text{--}160^\circ\text{C}$. These experiments confirm the opinion that molybdenum heterocomplexes does not participate in a real geochemical process [3].

The behaviour of the tungstenphosphate $\text{Na}_3[\text{PW}_{12}\text{O}_{40}]$ is quite another. Its characteristic frequencies at 1011cm^{-1} and 996cm^{-1} were observed in a high-temperature solution up to 360°C [4]. The less

stability of the crystalline molibdenum geteropolyanions in respect to tungsten one was mentioned in [5].

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